



Ultrawave

Ultrasonic Precision Cleaning



U-Series

Operator Instruction Manual

Contents

Contents	2
Safety Instructions	3
Installation – U100, U100H, U300 & U300H	6
Installation – U500H, U1300H & U2500H	7
Quick Guide	8
Manual I Control Panel Instructions (U100, U300)	9
Manual II Control Panel Instructions (U100H)	10
Manual III Control Panel Instructions (U300H, U500H, U1300H & U2500H) .	11
Technical Information	12
Ultrasonic cleaning detergents	13
Specifications	14
Maintenance	15
Troubleshooting	15
Returning equipment to Ultrawave	16
Warranty	17
WEEE Compliance	18
Compliance with the Control of Noise at Work regulations	19



Safety Instructions

Use of products

The following products are covered by this operating manual:

- U100, U100H, U300, U300H, U500H, U1300H & U2500H

The products listed above are a series of ultrasonic cleaning baths designed for indoor use by a professional user.



Electrical

Connect to a 230VAC fully earthed electrical supply via a 3pin plug.

It can be dangerous to operate an ultrasonic bath without an earth connected.

The U-Series machines are rated at up to 1050W maximum.

The detachable mains lead is rated at 250V 6A. **NEVER FIT A LEAD WITH A LOWER RATING.**

The mains plug is fitted with a 5A fuse. **NEVER FIT A FUSE OF A HIGHER RATING.**

On the U1300H and U2500H models, the IEC electrical socket on the rear of the unit is fitted with 2x T5A (slow blow) fuses. **NEVER FIT A FUSE OF A HIGHER RATING.**

The detachable mains lead is the disconnect device and should remain accessible while the machine is in use.

Ensure that excess mains cable is stored neatly.



Temperature: Care should be taken when operating the bath at higher temperatures as external surfaces may become hot.

When the temperature is set to 54°C or above, the unit will become hot and care should be taken when touching the case.

A risk assessment should be conducted – see BS EN ISO 13732-1:2008 for full details



General use

Do not place fingers, hands, or other parts of the body in the liquid in the bath when it is sonicating.

Always ensure the liquid is above the tank crease when in operation (page 8).

Do not place parts or containers directly on the bottom of the cleaning tank. Always use a basket or instrument cassette to support items to be cleaned. Not doing so may damage the bath and invalidate your warranty.

Never use toxic, flammable, acidic, caustic, or corrosive solutions in the bath.

Ensure the electrical supply is disconnected before moving/emptying.

Before cleaning, drain the bath. Clean by wiping with a clean non-abrasive cloth.

The user should familiarise themselves with this user manual before operating the equipment. Safety may be impaired if they are not followed.

Ultrawave will not be responsible for damage or injury caused by incorrect use of the equipment.

The user should apply to Ultrawave or its agent for advice on cleaning techniques or detergents.

IMPORTANT: Once the cleaning cycle has finished, remove the cleaned items, and rinse them immediately in clean running water.

REMEMBER

Always ensure the liquid is at or above the crease in the tank when in operation.

Do not put hot water above 50°C into the bath.

Always use the basket to support items in the bath.

Never expose hands, fingers, or other body parts to cleaning solutions.

Never use toxic, flammable, acidic, caustic, or corrosive solutions.

Never breathe the fumes from strong solutions.

Rinse the items in clean water once the cycle is complete.

Subjecting the bath to improper treatment or misuse will invalidate the warranty.

Safety Symbols



Danger

Indicates an imminently hazardous situation which will result in serious or fatal injury. This symbol is used only in the most extreme conditions.



Caution

Indicates a potentially hazardous situation which may result in minor or moderate injury. It may also be used to alert against unsafe practices.



Equipment Alert

Indicates a potentially hazardous situation which could result in equipment damage.

Other Symbols



Proper shipping orientation



Keep dry



Fragile



Catalogue Number



Date of Manufacture



Serial Number



Manufacturer



Country of manufacture



Unique Device Identifier

Installation – U100, U100H, U300 & U300H

The following parts and accessories are included:

- 1 x U-Series Ultrasonic Bath
- 1 x Basket
- 1 x Lid
- 1 x Ultraclean detergent sample
- 1 x Power cable
- 1 x U-Series quick guide

How to install:

Fill the bath with water and the correct dose of detergent.

Connect the mains lead into a suitable mains socket. Ensure that the mains plug is easily accessible.

The bath is now ready to use.

Installation – U500H, U1300H & U2500H

The following parts and accessories are included:

- 1 x U-Series Ultrasonic Bath
- 1 x Basket
- 1 x Lid
- 1 x 2m length of drain hose
- 1 x Hose tail
- 1 x Ultraclean detergent sample
- 1 x Power cable
- 1 x U-Series quick guide

How to install:

Locate the bath close to a drain or sink to allow easy drainage of the tank. Screw the hose connector into the drain valve located on the side of the unit. Connect one end of the drain hose to the hose connector and locate the other end over a drain or sink.



Fill the bath with water and the correct dose of detergent.

Connect the mains lead into a suitable mains socket. Ensure that the mains plug is easily accessible.

The bath is now ready to use.

Quick Guide

Pour water into the bath until it is at least $\frac{3}{4}$ full or the fluid level reaches the crease in the tank. To reduce the process preparation time, fill your bath with water at the temperature required for your process. The water you pour in must not exceed 50°C.

Add the required dose of detergent (see page 13).

Operate the ultrasonics by turning the timer dial to the required time and pressing the SONICS button (where applicable).

Operate the heater, if the bath has a heating function, by turning the heater dial to the required temperature and pressing the HEAT button.

Turn on the ultrasonics for approximately 5-10 minutes to degas the cleaning liquid. (See page 12 for more details on degassing).

The bath is now ready to use.

At the end of the cycle, remove the basket from the bath and rinse the items under clean running water.

The lid can be inverted, and the basket placed on top to catch excess fluid as the items dry.



Please refer to the following pages in this manual for more detailed instructions.

Change the cleaning liquid at regular intervals. Your cleaning process will determine how often to change the liquid – the more soiled your items, the more often you will need to change the liquid.

Ultrawave recommends changing the cleaning liquid at least on a daily basis.

Manual I Control Panel Instructions (U100, U300)

To switch on the ultrasonics:

Turn the Timer dial to the desired time, and then press the SONICS button.

The SONICS button and the SONICS light will glow. Ultrasonic activity will then commence in the liquid inside the tank and the Timer dial will be heard ticking.

At the end of the timed period, the Timer will click off, the SONICS light will go out, and the ultrasonic activity in the liquid will stop.

To stop the ultrasonic activity at any time, press the SONICS button while in operation.



Manual II Control Panel Instructions (U100H)

To switch on the ultrasonics:

Turn the Timer dial to the desired time, and the ultrasonics will automatically begin.

The SONICS light will glow. Ultrasonic activity will commence in the liquid inside the tank and the Timer dial will be heard ticking.

At the end of the timed period, the Timer will click off, the SONICS light will go out, and the ultrasonic activity in the liquid will stop.

To stop the ultrasonic activity at any time, turn the Timer dial to 0 while in operation.



To operate the heater:

Press the HEAT button to turn on the heater.

The HEAT switch will glow, and the liquid will start warming up. No indication is given when the preset maximum temperature of 70°C is reached.

To turn off the heater at any time, press the HEAT button while in operation.

NOTE: Ultrasonic activity will raise the liquid temperature by 5°C per hour.

If in doubt, check actual temperature with a thermometer.

Manual III Control Panel Instructions (U300H, U500H, U1300H & U2500H)

To switch on the ultrasonics:

Turn the Timer dial to the desired time, and then press the SONICS button.

The SONICS button and the SONICS light will glow. Ultrasonic activity will then commence in the liquid inside the tank and the Timer dial will be heard ticking.

At the end of the timed period, the Timer will click off, the SONICS light will go out, and the ultrasonic activity in the liquid will stop.

To stop the ultrasonic activity at any time, press the SONICS button while in operation.



To operate the heater:

Turn the HEATER dial to the desired temperature and press the HEAT button. The HEAT button and the HEAT light will glow, and the liquid will start to heat up.

When the set temperature is reached, the HEAT light will go out.

To stop the heater at any time, press the HEAT button while in operation (ie. when the HEAT light is already on).

NOTE: Ultrasonic activity itself will heat the liquid by 5°C per hour. This means that the liquid temperature may rise above the level indicated on the temperature dial.

The temperature dial only controls the heater cut-out temperature.

If in doubt, check the actual temperature with a thermometer.

Technical Information

The need to degas

In order to allow optimum ultrasonic activity, the gases present in ordinary tap water need to be driven out of the cleaning solution.

The time needed to degas the liquid varies depending on the amount of gas present in the liquid and the quantity of water in the tank. Ultrawave recommends a degas period of at least 10 minutes.

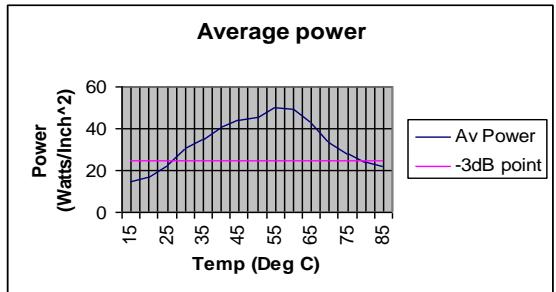
During the degas cycle, you will see bubbles of gas forming on the inside of the bath, and slowly rising to the surface. Degassing is complete when you can no longer see these bubbles. Another indication of increased “cold-boiling” at the liquid surface indicates that the liquid is degassed.

Once the liquid is degassed, the bath is ready for use.

The effect of heat

Heating the liquid in the bath will aid the cleaning process.

Normally a temperature of between 30 to 60°C is sufficient to accelerate the process. You will see from the graph below that optimum cleaning will be obtained at 60°C



If you are using your bath to clean medical equipment, it is recommended to limit the fluid temperature to 40°C. This will avoid the coagulation of protein and other bio burden which can then bake onto the equipment.

Ultrasonic activity itself will heat up the liquid at a rate of approximately 10-15°C per hour if in continuous use.

Cleaning time

Cleaning time will depend on application, type and amount of contamination. General light contamination should be removed in less than 10 minutes.

An indication of cleanliness is when stains are no longer visible, and contamination no longer appears in a stream from the item being cleaned.

Ultrasonic cleaning detergents

Detergents are a vital component in the ultrasonic cleaning process, aiding in the removal and loosening of debris from the surfaces of items placed in the tank while also intensifying the power of the ultrasonic activity.

Ultrawave offers a range of specially formulated ultrasonic detergents for use in applications including medical and heavier industrial cleaning requirements.

Sonozyme: A poly-enzymatic detergent for cleaning surgical instruments.

Ultraclean M2: A general purpose detergent for plastics, glass, and metals (except aluminium and other soft metals).

Ultraclean SA: A general purpose cleaning detergent for aluminium and other soft metals.

Ultraclean CS: For removal of moderate oil, grease and other contaminants (except aluminium and other soft metals).

Ultraclean CBX: A heavy oil and carbon remover for non-ferrous metals (except aluminium and other soft metals).

Ultraclean SPX: A strong alkaline detergent for cleaning of mould, tools and dies (except aluminium and other soft metals).

Ultraclean PH: For rust and limescale removal, and rebrightening agent for non-ferrous metals (except aluminium and other soft metals).

Ultraclean RI: Rust inhibitor for corrosion prevention of ferrous metals.

Ultraclean CTA: An acidic detergent for use in metal degreasing, descaling and brightening.

Dosing Matrix (ml of detergent per tank)

	Tank capacity (L)	Detergent dose (ml)	
		2%	5%
U100	1.5	30	75
U100H	1.5	30	75
U300	2.5	50	125
U300H	2.5	50	125
U500H	4.5	90	225
U1300H	12.5	250	625
U2500H	25	500	1250

Each of these detergents is available from Ultrawave. The required detergent dose may vary depending on the component being cleaned and the level of contamination. Ultrawave recommends a dosage of between 2 and 5% for all detergents other than Sonozyme which is recommended at 0.5% by volume.

Specifications

Ambient Temperature	5 to 40°C
Maximum relative humidity	80% R.H. in room temperatures up to 31°C decreasing linearly to 50 % R.H. at 40°C
Altitude above sea level	Up to 2,000 m (6,500 ft)
Operating Environment	Indoor use only

Electrical details

Mains supply:	230V @ 50Hz
Pollution degree:	2
Installation category:	II

Note: Mains supply voltage fluctuations are not to exceed $\pm 10\%$ of the nominal supply voltage

Ultrasonic frequency:	44kHz (U100, U100H, U300 & U300H) 32 to 38kHz (U500H, U1300H & U2500H)
Heater range:	Ambient to 70°C

	Working capacity (litres)	Tank capacity max. (litres)	Total Power (W)	Ultrasonic power (W)	Heating power (W)
U100	1.5	1.75	35	35	-
U100H	1.5	1.75	115	35	80
U300	2.5	2.75	35	35	-
U300H	2.5	2.75	185	35	150
U500H	4.5	5	250	100	150
U1300H	12.5	14.5	500	200	300
U2500H	25	28	1050	400	650

Maintenance

It is important to keep your bath clean. Not only will contaminated liquid reduce the performance of the bath, it may also damage it. Change the cleaning liquid regularly. Your cleaning process will determine how often to change the liquid – the more soiled your items, the more often you will need to change the liquid. Change the cleaning liquid at least daily.

The base of the bath generates the ultrasonic activity by vibrating at very high speeds. If any contaminants are in contact with the bath, they act as an abrasive, causing wear on the metal surface. In extreme cases, the bath will develop holes and start to leak.

Portable Appliance Testing (PAT) should be conducted with water in the bath.

There are no user serviceable parts inside the bath. All service and repair must be conducted by suitably trained and qualified engineers approved by Ultrawave.

Troubleshooting

Ultrawave has a dedicated After Sales team who can resolve any problems that occur with your bath. However, on many occasions it is possible that the problem can be rectified by the operator.

The unit fails to turn on and no lights illuminate	Check that the unit is plugged in, and that mains electricity is present. Check the mains plug fuse.
The unit does not sonicate.	<p>Check that the indicators illuminate when the unit is switched on.</p> <p>If the indicators fail to illuminate, check the mains supply and fuse in the mains plug.</p> <p>If the indicators illuminate but the bath does not sonicate, please contact our After Sales team.</p>
The unit sonicates but does not clean effectively	<p>Have you added the correct amount of cleaning fluid?</p> <p>Have you overloaded the basket?</p>
The unit sonicates but does not heat.	<p>Does your unit have heaters? – there will be an “H” in the description line on the rating plate.</p> <p>Check that the heater indicator illuminates when the unit is switched on.</p> <p>Is the heater dial turned to the desired temperature?</p> <p>If the heater indicator illuminates but the bath does not heat, please contact our After Sales team.</p>

If your problem persists, it may be possible to rectify any issues over the telephone. Our dedicated service and product support personnel may be able to troubleshoot your problem remotely, thus causing minimal disruption.

Contact our After Sales Department: +44 (0) 29 2083 7337
service@ultrawave.co.uk

Please have to hand your model and serial number together with information on the problem prior to contacting us.

If we are unable to solve your problem over the phone, we may suggest returning your product to the distributor where you purchased or directly to Ultrawave. Where appropriate, we operate a Return to Base (RTB) warranty and repairs policy.

Returning equipment to Ultrawave

All equipment being returned to Ultrawave for service, repair or other reason **MUST BE FULLY DECONTAMINATED** prior to return and include a copy of the certificate of decontamination.

Failure to do so may result in additional charges, or the equipment being returned to the user/sender at Ultrawave's discretion.

Ultrasonic baths which have been used in medical/healthcare applications should be decontaminated/packaged in accordance with MHRA guideline document DB2003(5) 'Management of Medical Devices prior to Repair, Service or Investigation', this can be found at www.mhra.gov.uk

This policy is designed to protect the health and safety of Ultrawave employees reducing the risk of potential injury or infection

If you require further information please contact the After Sales Dept. on:

- Tel: +44 (0) 29 2083 7337
- E-mail: service@ultrawave.co.uk

Warranty

Ultrawave U-Series Ultrasonic Baths, when used in accordance with the instructions, are covered by the following warranty:

Ultrawave ultrasonic generators and all electrical, electronic and mechanical components are made of the highest quality materials and are guaranteed for 12 months from the date of sale, against failure caused by genuine defective material or workmanship. If the Ultrasonic Bath is registered online with us, within 30days of purchase, then the warranty is extended to 36months – see link www.ultrawave.co.uk/servicingrepair/warranty-registration

Ultrawave Ultrasonic PZT transducers are guaranteed not to crack, deteriorate, or become detached from the radiating surface (bonding process), for five years from date of sale. If exposed to liquid or chemicals the warranty will be invalidated.

Within the warranty period Ultrawave will repair or replace free of charge, Ex Works, all defective parts in the system/equipment but Ultrawave shall not be liable for costs for removing (disassembling) or installing (assembling) parts.

For repairs and replacements effected under these warranty conditions, same warranty conditions are applicable. The warranty period for such repairs and replacements shall, however, be only until the end of the warranty period valid for the original date of sale.

Damage caused by improper handling or misuse is not covered by warranty and costs may be incurred.

The warranty does not cover normal wear and tear e.g. cavitation erosion of vibrating surfaces (i.e. tank) and such like, so far as this wear is not caused by structural failures. The warranty does not cover defects or failures arising out of non-observance, improper or faulty maintenance or faulty repair or by alterations carried out without Ultrawave's consent in writing.

Additionally, any damage caused by the use of toxic, flammable, acidic, caustic or corrosive chemicals or fluids not recommended by Ultrawave will invalidate the warranty. If in any doubt, contact Ultrawave to ensure compatibility in the first instance.

Furthermore, any external services to and from the Ultrasonic Bath shall be excluded, which may be subjected to external forces outside the control of Ultrawave.

WEEE Compliance

Ultrawave are complying with the WEEE regulations by contracting our obligations to a Producer Compliance scheme. Once it is deemed that your U-Series model is no longer effective, please contact Ultrawave to arrange collection by our compliance scheme provider, who will pick up the machine from your premises.

Compliance with the Control of Noise at Work regulations

The Control of Noise at Work Regulations 2005 (the [Noise Regulations](#)^[1]) came into force for all industry sectors in Great Britain on 6 April 2006. The Control of Noise at Work Regulations 2005 replaces the Noise at Work Regulations 1989.

The aim of the Noise Regulations is to ensure that workers' hearing is protected from excessive noise at their place of work, which could cause them to lose their hearing and/or to suffer from tinnitus (permanent ringing in the ears).

The level at which employers must provide hearing protection and hearing protection zones is now 85 decibels (daily or weekly average exposure) and the level at which employers must assess the risk to workers' health and provide them with information and training is now 80 decibels. There is also an exposure limit value of 87 decibels, taking account of any reduction in exposure provided by hearing protection, above which workers must not be exposed.

To help you calculate your workers' exposure, Ultrawave publish the noise generated by your ultrasonic cleaner on the Certificate of Test. The figure is that experienced by a worker standing in the operating position.

The full text of the [Control of Noise at Work Regulations 2005](#)^[2] and the full text of the [Noise at Work Regulations 1989](#)^[3] can be viewed online.

Guidance on the 2005 Regulations can be found in the free HSE leaflet '[Noise at Work](#)'(INDG362 (rev 2))^[4] and in HSE's priced book 'Controlling Noise at Work' (L108) (ISBN 0 7176 6164 4) available from [HSE Books](#)^[5] or from bookshops.

[1] <http://www.hse.gov.uk/noise/regulations.htm>

[2] <http://www.opsi.gov.uk/si/si2005/20051643.htm>

[3] <https://www.hse.gov.uk/noise/regulations.htm>

[4] <https://www.hse.gov.uk/pubns/indg362.pdf>

[5] <https://www.hse.gov.uk/pubns/books/l108.htm>

The Great Britain noise regulations are based on the [EU Environmental Noise Directive](#) requiring similar basic laws throughout the EU.



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