



Ultrawave  
Ultrasonic Precision Cleaning

# ARGON Ultrasonic Cleaning System



ARGON

## Operator Instruction Manual



## Contents

Contents .....	1
Safety instructions .....	2
Quick Install Guide .....	3
Filling the tank .....	5
Quick Operating Guide .....	5
Full Operator instructions .....	6
Draining the tank .....	10
Changing/Inspecting the filters .....	11
Technical Information.....	13
Ultrasonic cleaning detergents.....	14
Ultrasonic cleaning good practice.....	15
Maintenance .....	16
Disposal of this ultrasonic cleaning system.....	16
Returning equipment to Ultrawave .....	16
Warranty .....	17
Troubleshooting .....	18
Compliance with the Control of Noise at Work regulations.....	19
Temperatures of touchable hot surfaces.....	20
Service Record .....	21

## Safety instructions

### Electrical

Your **Argon ultrasonic cleaning system** is designed to be connected to a 415VAC 3P+N+E protected (fuses, MCBs) type supply.

Connection to a 400-415VAC (3P+N+E) supply may be hard wired or via a 5 pin, 16/32A, red BS4343 plug and socket (rating dependant on unit requirements).

*It is dangerous to operate your ultrasonic bath without a connection to mains earth.*

Ensure that excess mains cable is stored neatly.



### General use

Ensure that the tank contains liquid before you switch it on.

Always use a basket to support items to be cleaned.

*Not doing so may damage the ultrasonic cleaning system and invalidate your warranty.*

Do not place hands or fingers in the tank.

Care should be taken when operating the ultrasonic cleaning system at higher temperatures as external surfaces may become hot.

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

Do not move the ultrasonic cleaning system when it is full of water.

Read the whole of these instructions. 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.

### WEEE Compliance

Ultrawave is complying with the WEEE regulations by contracting our obligations to a Producer Compliance Scheme. Once it is deemed that this **ARGON** ultrasonic cleaning system is no longer effective, please contact Ultrawave to arrange collection by our compliance scheme provider, who will pick up the machine from your premises.

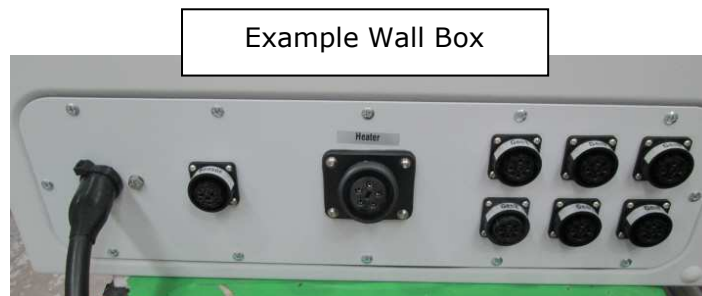
## Quick Install Guide

Locate the Argon ultrasonic cleaning system close to a drain.

Mount the electrical cabinet on a wall or optional stand in a suitable location to avoid being affected by the cleaning process.

Please ensure there is at least 100mm of space on both the left- and right-hand side of the cabinet to allow for fan filter cleaning and ventilation.

Connect all electrical connections from tank to control box matching the socket label to the plug label:



**Do** route the cables between the tank and electrical cabinet in suitable open frame cable trays keeping a separation between the sonics and sensor cables.

**Do not** let the cables rest on the floor creating a trip hazard

**Do not** let the cables rest on the floor as fluid from the process may affect the outer insulation

**Do not** coil up excess cable.

**Do** connect the mains lead into a suitable mains outlet.

The **Argon Series** tanks are divided into the process area on the left and weir area on the right. Both areas have independent drain valves fitted at the rear of the unit.



Drain valve closed

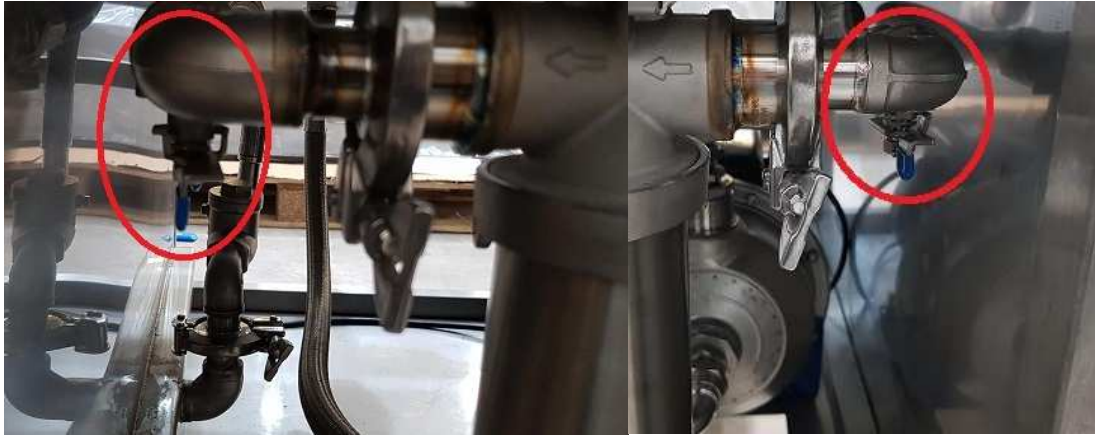


Drain valve open

Please ensure these valves are in the closed position before filling.

The **Argon Series** recirculation and dual filter system is situated below the weir area, accessible behind the front black hinged panel.

There is an isolation valve on the input and output side of the dual filter system.



Please ensure these valves handles are in line with the pipework as this is the open position.

Before filling the unit for the first time it would be advisable to fit the recirculation filters, please see page 11.

## Filling the tank

Ensure both tank drain valves are in the closed position

Ensure both recirculation isolation valves are in the open position

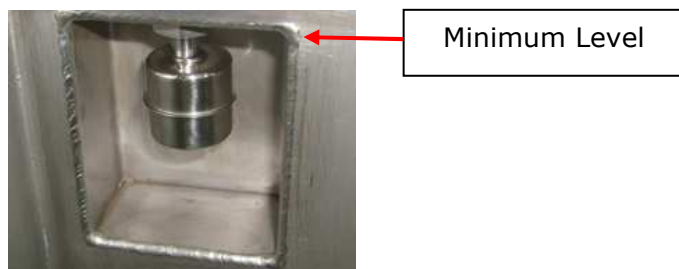
Fill the weir area with cold or warm water as required

Wait until the weir area is full to the top of the weir divider plate weir

Confirm water is now filling the process area via the recirculation system at the bottom of the weir divider plate:

If no water is visible in the process area, recheck the position of the recirculation filter isolation valves

If water is visible, move the hose to fill the process area until the upper float pocket is covered.



The **Argon Series** of units are fitted with two float level sensors. The lower float allows the heaters to operate, and the upper float allows the ultrasonic and recirculation pump to operate. Please ensure the fluid reaches over the top level sensor or the ultrasonics will not operate

Add the required dose of detergent (see pg. 14).

## Quick Operating Guide

Switch on the machine via the switch at the front of the unit/control panel.

Press the “enter” key or the Start/Stop button to accept the programmed cleaning cycle settings and start the cleaning cycle.

Pressing again will terminate the cycle.

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

### **REMEMBER**

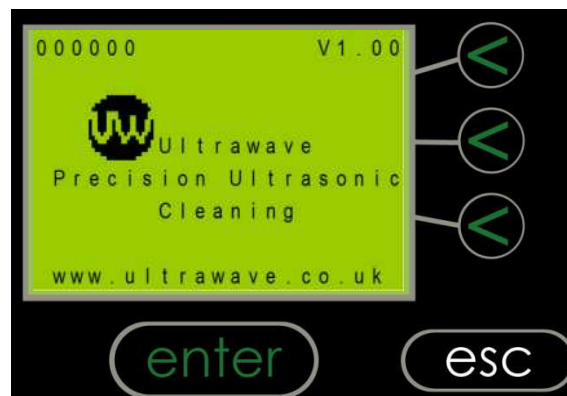
- Always ensure the liquid is above the float level sensor when in operation.
- Do not put hot water above 50°C into the tank.
- Always use the basket.
- Never expose hands to cleaning solutions.
- Never use toxic, flammable, acidic, caustic or corrosive solutions.
- Never breathe the fumes from strong solutions.
- Rinse the items in clean water once the cycle is complete.

Subjecting the Argon Series ultrasonic cleaning system to improper treatment or misuse will invalidate the warranty.

## Full Operator instructions

Switch on the machine via the switch at the front of the unit/control panel. Note that if the 7-day timer is activated, that will control the machine On/OFF. See the administrator manual for details

When the **Argon Ultrasonic Cleaning System** is first switched on, the following screen will appear for approximately 5 seconds.



While this screen is displayed, the buttons are inoperative. This is normal as the machine is running through its start-up routine and checking all internal systems are working correctly.

The top line of the display indicates the **Argon Ultrasonic Cleaning System's** serial number. This uniquely identifies the machine.

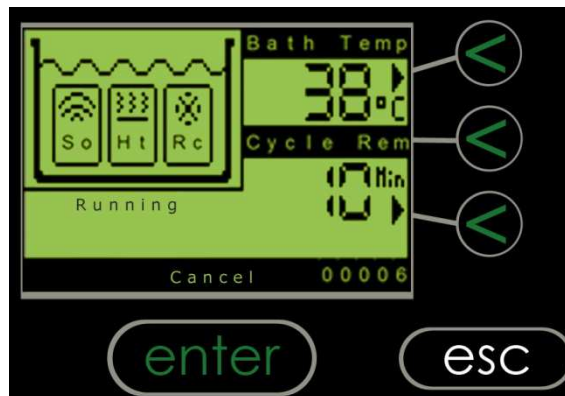
To protect the tank and for safety reasons, the Argon Series has a factory preset minimum/maximum operating temperature, this being 6°C & 90°C for a wash/rinse tank and 15°C & 90°C for a dryer.

After the initial start-up screen the user screen will appear:





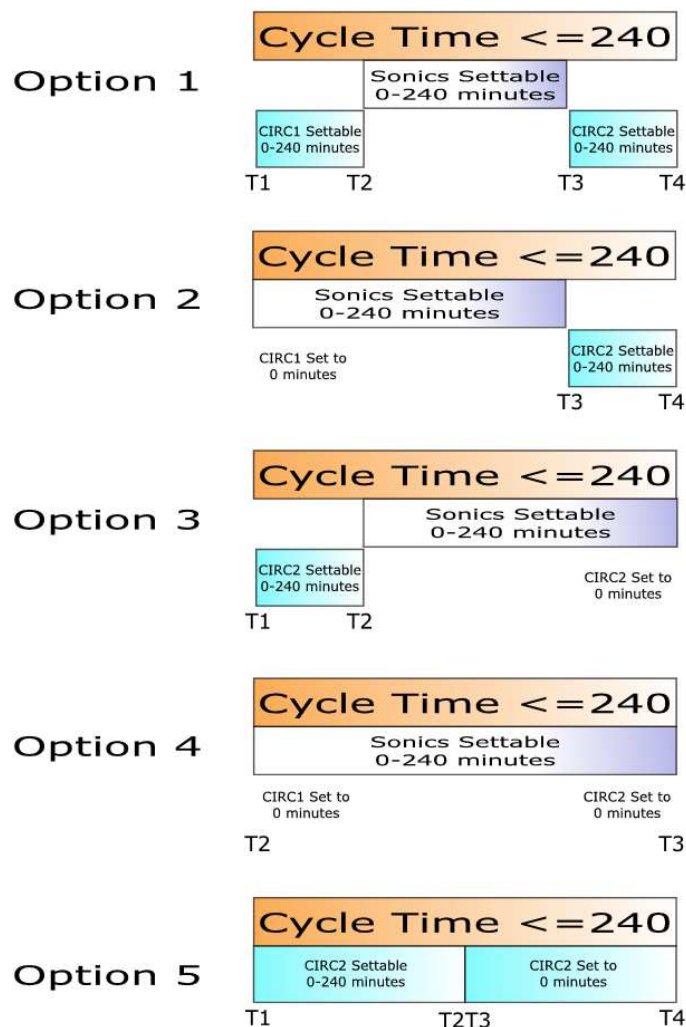
Pressing the 'enter' button (under the flashing Start) will start a pre-set cycle:



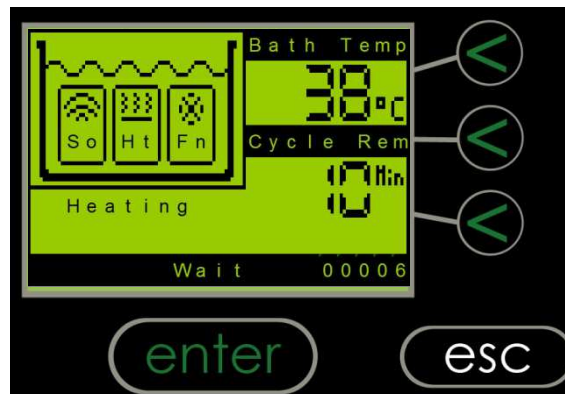
If the unit is a wash/rinse type the cycle will now run (indicated by the 'Running' message) for its pre-set cycle time and any re-circulation (if fitted) will also run once at the cycle start point and once towards the end of the cycle.

#### Explanation of a cycle:

#### Cycle Options

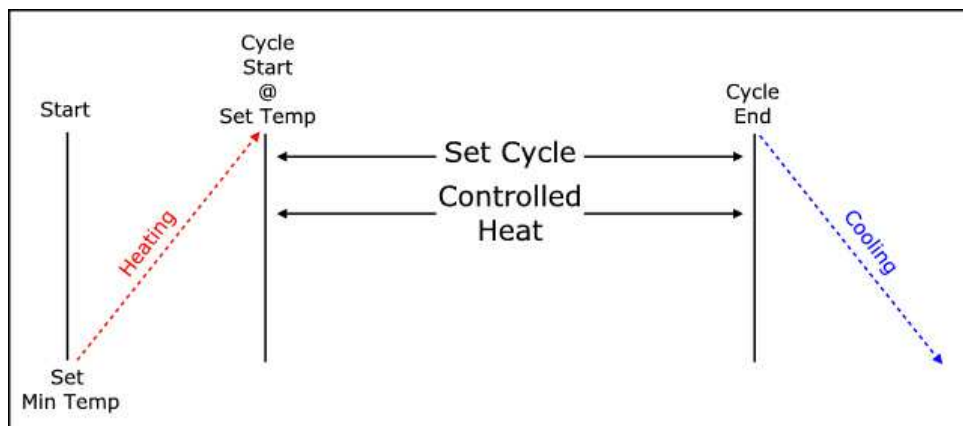


If the unit is a dryer type the cycle will run but the cycle time will not start its countdown until the 'Set Temp' is reached at which point it will start its preset 'Cycle Rem'. This cycle will also appear if the fluid temperature is below the minimum temperature. During this 'warm-up' period the screen will show a 'Heating' message:

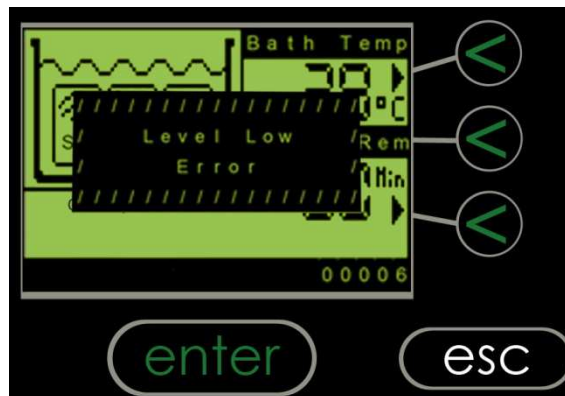


The cycle can be aborted at any time by the operator, by pressing the 'enter' button (under 'Cancel'), the screen will show a 'Operator' message in place of 'Running' and the screen will return to the initial user screen.

See below for an explanation of a Dryer cycle:



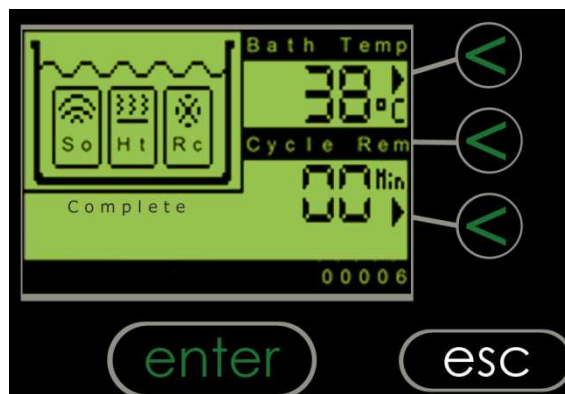
Any error/fault will display a message on screen and the cycle will be terminated:



Press the 'enter' button to acknowledge the error/fault, these are:

- |    |               |   |
|----|---------------|---|
| 1. | Level Low -   | The liquid level is too low                   |
| 2. | Under Temp -  | The temp is under the min. temperature        |
| 3. | Over Temp -   | The temp is over the max. temperature         |
| 4. | Operator -    | The operator cancelled the cycle              |
| 5. | Sensor fail - | The temperature sensor is faulty              |
| 6. | Power fail -  | There has been a power failure during a cycle |

On successful completion of the cycle, the following message will be displayed. The screen will return to the user screen ready for another cycle to be started.



## Draining the tank

The tank is drained via the drain outlet located on the one of the tank sides or bottom.



Drain valve – close



Drain valve – open

**Step 1** – Ensure that the drain is either directly over a drain or is connected to a tube, which is placed into a drain.

**Step 2** – Turn the tap until it is in its open position.

**Step 3** – Allow the liquid to drain.

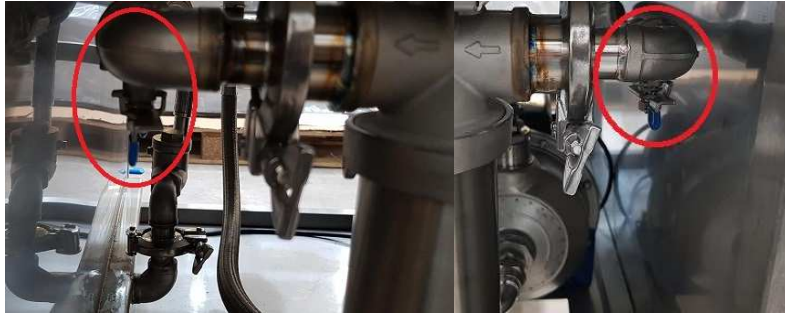
**Step 4** – Close the tap when the tank is completely drained

**Step 5** – Wipe the inside of the tank to remove debris and/or residual fluid.

If there is a weir fitted inside the tank there will be a separate drain valve for this, follow the same instructions as “draining the tank”.

## Changing/Inspecting the filters

There are two valves used as isolation devices when changing the filters on the dual filter system shown here in the normal open position:



**Note:** Do not shut off either valve when the Argon Series is in operation as this will damage the pump.

The tank process and weir areas do not need to be emptied to change the filters.

**Step 1** - Ensure that the drip tray is in place below the filter housings:



**Step 2** - Turn both isolation valves 90 degrees to the “off / “closed” position to isolate the tank fluid:

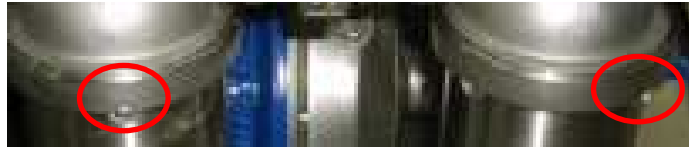
**Step 3** - Open the filter housing bleed valve on the bottom of one of the housings:



**Step 4** - Dispose of all fluid in the filter housing.

**Step 5** - Repeat the same process with the second filter housing.

**Step 6** – Remove each filter housing using the tool provided, by turning the housing locking ring left/anti-clockwise:



**Step 7** – The filter can now be inspected and replaced if necessary. Please note the right filter is the coarse filter (higher value uM filter) and the left filter is the fine filter (lower value uM filter) when replacing the filter elements.

**Step 8** – Repeat the same process for the second filter.

**Before returning the isolation valves to their normal working positions make sure that filter housings are replaced and re-tightened.**

Return the two isolation valves to their original “on / open” positions.

## 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, although larger tanks will require a longer degas period.

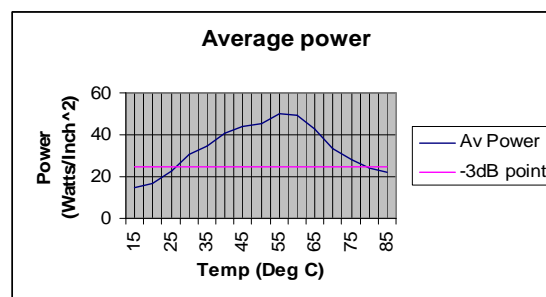
During the degas cycle, you will see bubbles of gas forming on the inside of the tank, and slowly rising to the surface. Degassing is complete when you can no longer see these bubbles. Another indication of increased “cold-boiling” at the liquid surface indicates that the liquid is degassed.

Once the liquid is degassed, the ultrasonic cleaner is ready for use.

### The effect of heat

Heating the liquid in the ultrasonic cleaner will aid the cleaning process.

Normally a temperature of between 30 to 70°C is sufficient to accelerate the process. You will see from the graph that optimum cleaning will be obtained at 60°C



If you are using your ultrasonic cleaner to clean medical equipment, it is recommended to limit the fluid temperature to 40°C. This will avoid “baking” proteins.

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.

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

**Ultraclean SA:** A general purpose cleaning detergent suitable for use on aluminium and other soft metals.

**Ultraclean M2:** A general purpose cleaning detergent for all plastics, glass and metals (except aluminium and other soft metals), which is also suitable for use on medical instruments.

**Ultraclean CS:** Moderate grease and heavy contaminant removal for industrial cleaning applications. Not suitable for use on aluminium and other soft metals.

**Ultraclean CBX:** An alkaline detergent for heavy grease and carbon removal. Not suitable for use on aluminium and other soft metals.

**Ultraclean SPX:** A strong alkaline detergent for removal of tough grease and heavy carbon deposits. Not suitable for use on aluminium and other soft metals.

**Ultraclean PH:** A strong acidic based detergent for heavy descaling, light rust removal and metal brightening. Not suitable for use on aluminium and other soft metals.

**Ultraclean CTA:** An acidic based detergent for descaling, degreasing and brightening of metals. Fair compatibility with aluminium.

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

**Ultraclean Test Kit:** A sample pack of 1L each of the Ultraclean: SA, M2, CS, CBX, SPX and PH.



## **Ultrasonic cleaning good practice**

**Baskets:** Components must be placed in a basket before being placed into the tank. Do not place parts or components directly onto the base of the tank as this will damage the ultrasonic cleaning system and this may invalidate your warranty.

**Detergents:** Ultrasonic cleaning requires the presence of a cleaning detergent to clean effectively. See page 14 for more information.

**Rinsing:** Components should be rinsed with clean running water prior after removal from the bath.

Rinsing the components ensures that any contaminants present in the water at the end of the cycle do not re-adhere to the components when the basket is removed from the tank.

**Electrical Safety Testing** (PAT testing) should be conducted with water in the tank.

## **Maintenance**

It is important to keep your bath clean. Not only will contaminated liquid reduce the performance of the ultrasonic cleaning system, 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 tank generates the ultrasonic activity by vibrating at very high speeds. If any contaminants are in contact with the bottom of the tank, they act as an abrasive, causing wear on the metal surface. In extreme cases, the tank will develop holes and start to leak.

Portable Appliance Testing should be conducted with water in the ultrasonic cleaning system.

Service contracts for your ultrasonic cleaning equipment are available from Ultrawave.

Contact our After Sales Department for more information:

Tel: +44 (0) 845 330 4238

Email: [service@ultrawave.co.uk](mailto:service@ultrawave.co.uk)

## **Disposal of this ultrasonic cleaning system**

At the end of its useful life, please ensure that you dispose of this product in accordance with national regulations.

## **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](http://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 Department. on:

Tel: +44 (0) 845 330 4238

E-mail: [service@ultrawave.co.uk](mailto:service@ultrawave.co.uk).

## **Warranty**

**Ultrawave Industrial Cleaning Systems and Equipment, 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 commissioning on site by our engineer but no greater than 13 months after shipment date, against failure caused by genuine defective material or workmanship, unless otherwise agreed.

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 shipment. 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 originally delivered system/equipment.

**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 of e.g. motors, pumps, cavitation erosion of vibrating surfaces 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.

The warranty excludes consumable items such as filters, seals and detergents which would need to be replaced as part of any routine maintenance. Furthermore any external services to and from the system/equipment shall be excluded, which may be subjected to external forces outside the control of Ultrawave.

## **Extended Warranty**

An Extended warranty on the system/equipment is offered with two options:

Option 1 - for a period of 36 months from the date of commissioning on site by our engineer but no greater than 37 months after shipment date;

Option 2 - for a period of 60 months from the date of commissioning on site by our engineer but no greater than 61 months after shipment date.

The warranty will remain in force for the stated period of the option taken out above, provided always that any system/equipment which includes the extended warranty is serviced at regular intervals as part of a separate Planned Preventative Maintenance Service (PPMS) agreement. All PPMS functions under any PPMS agreement must be performed by Ultrawave personnel or organisations authorised by Ultrawave. Services under any PPMS agreement must be carried out at intervals of a minimum of once per

year or more for the full term of the extended warranty, as designated by Ultrawave for each individual system/equipment.

Warranties will not apply if any fault has been caused by failure of the Customer to carry out routine maintenance, in addition to any PPMS carried out by Ultrawave as part of the extended warranty, or the Customer fails to ensure the required services are maintained.

Ultrawave will accept no liability for any loss of production or business interruption resulting from any system/equipment failure whether or not any such failure is covered by any Ultrawave warranty.

Warranties are not transferrable to other users in the event of the system/equipment being sold or otherwise transferred to third party users. Warranties will become void in the event of the system/equipment being moved in any way from any location where the system/equipment was originally commissioned by Ultrawave unless Ultrawave are notified in writing prior to any such move.

## Troubleshooting

Ultrawave have a dedicated After Sales team who are able to resolve any problems that occur with your **Argon Ultrasonic Cleaning System**. However, on many occasions, it is possible that the problem can be rectified by the operator.

The unit fails to turn on (no display is shown)	Check that the system is plugged in and that mains electricity is present.
The screen displays: "Level Low"	Fill the tank with liquid so that it is above the float switch inside the tank. If the screen still displays "LEVEL LOW", there is an internal fault and the ultrasonic cleaning system will need to be serviced.
The screen displays: "Power Fail"	The system had lost power during a cycle, this will be indicated at next power-up. This is just a notification to the user that the last cycle may not have completed.
The screen displays: "Under temp"	Allow the system to heat before starting another cycle
The screen displays: "Over temp"	Allow the system to cool, or remove some of the hot liquid and replace with cold liquid.
The screen displays: "Sensor Fail"	Switch the system off and then back on again. If the screen still displays "Sensor Fail", there is an internal fault and the system will need to be serviced.

If any of these problems persist, the Ultrawave After Sales Department can be contacted on +44 (0) 29 2083 7337 or [service@ultrawave.co.uk](mailto:service@ultrawave.co.uk).

**There are no user serviceable parts inside the Argon Series ultrasonic cleaning systems.**

## Compliance with the Control of Noise at Work regulations

The Control of Noise at Work Regulations 2005 (the [Noise Regulations](#)<sup>[1]</sup>) came into force for all industry sectors in Great Britain on 6 April 2006. The Control of Noise at Work Regulations 2005 replace 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 Ltd 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](#)<sup>[2]</sup> and the full text of the [Noise at Work Regulations 1989](#)<sup>[3]</sup> can be viewed online.

Guidance on the 2005 Regulations can be found in the free HSE leaflet '[Noise at Work](#)'(INDG362 (rev 1))<sup>[4]</sup> and in HSE's priced book 'Controlling Noise at Work' (L108) (ISBN 0 7176 6164 4) available from [HSE Books](#)<sup>[5]</sup> or from bookshops.

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

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

[3] [http://www.opsi.gov.uk/si/si1989/Uksi\\_19891790\\_en\\_1.htm](http://www.opsi.gov.uk/si/si1989/Uksi_19891790_en_1.htm)

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

[5] <http://www.hsebooks.co.uk>

## Temperatures of touchable hot surfaces

BS EN 13202:2000 gives the recommended maximum surface temperatures for different materials at various exposure times (see below)

Your ultrasonic bath can be set so that the cleaning fluid is up to 80°C. This means that parts of your ultrasonic cleaner will be above the recommended maximum temperature. If you do operate your ultrasonic cleaner at temperatures above the recommended maximum, then Ultrawave Ltd advise that you conduct a risk assessment, and if appropriate fix a "Caution - Hot" warning label to your machine.

The following limit values are based on the harmonized standards -

- BS EN 13202:2000 Ergonomics of the thermal environment - Temperatures of touchable hot surfaces - Guidance for establishing surface temperature limit values in production standards with the aid of -
- EN 563: 1994 Safety of machinery - Temperatures of touchable surfaces - Ergonomics data to establish temperature limit values for hot surfaces.

Materials/time-temp*	1 sec	4 sec	10 sec	10 min	8 hr
uncoated metal	65°C	58°C	55°C	48°C	43°C
painted metal	83°C	64°C	55°C	48°C	43°C
enameled metals	74°C	60°C	56°C	48°C	43°C
ceramics, glass, stone	80°C	70°C	66°C	48°C	43°C
plastics	85°C	74°C	70°C	48°C	43°C
wood	110°C	93°C	89°C	48°C	43°C

Time	Contact	Part
1 sec	accidental contact	Outer case, tank flange
4 sec	parts held for short periods	knobs, switches
10 sec	parts continuously held in normal use	handles
10 min	prolonged use	handles
8 hr	continuous use	handles

## Service Record

Ultrawave recommends that your **Argon Ultrasonic Cleaning System** is tested, validated and serviced at least once every 12 months. This record must be maintained by the engineer conducting these tests

A complete validation and testing log book can be obtained from Ultrawave. For details of testing, validation, servicing and Service contracts contact Ultrawave or its agent.

There are no user serviceable parts inside. All service and repair should be referred to qualified Ultrawave engineers only.

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			

Date		Cycle count	
Engineer			
Details			
Next service due			







# Ultrawave

## Ultrasonic Precision Cleaning

Ultrawave Ltd  
Eastgate Business Park  
Wentloog Avenue  
Cardiff  
CF3 2EY

+44(0) 29 2083 7337  
[sales@ultrawave.co.uk](mailto:sales@ultrawave.co.uk)



Ultrawave baths are manufactured in the United Kingdom.

Ultrawave baths are manufactured to exacting standards and conform to international standards.

[www.ultrawave.co.uk](http://www.ultrawave.co.uk)