

# *ArgoLab* Ultrasonic Baths

*DU Series*

*Sweep Technology*

**Operation and Maintenance Manual**



# Summary

1 Safety Information.....	3
1.1 Definitions of Warning Words and Symbols.....	3
1.2 Reporting deadlines.....	3
1.3 Basic requirements for safe use .....	4
1.4 Unauthorised use .....	4
1.5 Responsibility of the Instrument Owner .....	4
2 General Warnings.....	5
3 Intended use.....	6
4 CE Compliance .....	6
5 Warranty.....	6
6 Unpacking the Instrument.....	6
6.1 PACKAGE CONTENTS .....	7
7 Principle of Operation .....	7
7.1 Instrument Parts.....	7
8 TECHNICAL SPECIFICATIONS.....	8
9 Display and Controls.....	8
9.1 Setting the temperature.....	9
9.2 Setting the timer.....	9
9.3 Multifrequency .....	9
9.4 Setting the Ultrasonic Power.....	9
9.5 PULSE.....	9
9.6 DEGAS .....	10
10 CARE AND MAINTENANCE.....	10
11 CLEANING PROCESSES .....	10
12 Troubleshooting Guide .....	10
13 DU-06 (Instrument without heating).....	11
Seconds set.....	11
(countdown) .....	11
Ultrasonic switch-off button .....	11
14 Disposal of Electronic Devices .....	12

# 1 Safety Information

## 1.1 Definitions of Warning Words and Symbols

The safety information in this manual is very important in order to avoid personal injury, damage to the instrument, accessories, malfunctions or incorrect results due to non-compliance. Please read this manual carefully in its entirety and make sure you familiarise yourself with the device before you start working with it.

This manual must be kept near the instrument in an easily accessible place, so that the operator can refer to it if necessary.

Always enclose the instruction manual when transferring the device to a third party.

Safety instructions are indicated by warning terms or symbols.

## 1.2 Reporting deadlines

**WARNING** for a medium-risk hazardous situation, which could lead to serious injury or death if not avoided.

**CAUTION** for a hazardous situation with reduced risk which, if not avoided, may result in minor or moderate material damage, loss of data or injury.

**NOTICE** for important product information.

**NOTE** for useful product information.

### Warning symbols:



#### Attention

This symbol indicates a potential risk and warns of proceeding with caution.



#### Attention

This symbol draws attention to a possible danger from **electric current**.



#### Attention

This symbol draws attention to a possible danger from a hot surface.



#### Attention

This symbol draws attention to a possible health hazard due to contact with the oscillating liquid.



#### Attention

This symbol draws attention to a possible danger to hearing due to not wearing ear protection.



The instrument must be used according to the instructions in the reference manual. Read the instructions carefully.

### Notice



This symbol draws attention to possible damage to instruments or instrument parts.

### Notes



This symbol highlights further information and tips.

## 1.3 Basic requirements for safe use



The proper functioning of the instrument and the safety of the operator are only guaranteed if all the following points are observed:

- The device may only be used for purposes for which it was built and only in accordance with the specifications mentioned in this manual. Any other use may result in serious damage and consequences.
- The instrument must only operate under the environmental conditions described in this manual.
- The mains plug must be always freely accessible. Pull out the power plug or disconnect the power supply in an emergency.
- The instrument may only be connected to properly earthed sockets using the supplied power cord.
- Check that the mains and power frequency match the values indicated on the instrument's identification label.
- The device must not be opened by the user for any reason. Only perform this operation if explicitly authorized to do so by the manufacturer.
- Do not use unsuitable disinfectants or detergents.
- Do not expose the bath to corrosive influences.
- Only move the ultrasonic bath when it is empty.
- Only empty the bath when it is switched off.
- Do not contact any oscillating liquid during operation, this could cause damage to health.
- Wear ear protection when standing for prolonged periods in the immediate vicinity of the device.
- Do not operate the bath without liquids inside.
- Do not place objects on the bottom of the tank without using the basket.
- During the heating phase of the bath liquid, stir every 15 minutes or switch on the ultrasound to reduce the danger of burns due to overheating.

## 1.4 Unauthorized use



The instrument must not be operated if:

- It is visibly damaged (e.g. due to transport);
- It has been stored for a long period of time under adverse conditions (exposure to direct light, heat sources or in places saturated with gas or vapours) or in environments with different conditions from those mentioned in this manual.
- For structural reasons and due to environmental conditions, this instrument is not suitable for use in a potentially explosive atmosphere or in environments where explosive substances are worked on.

## 1.5 Responsibility of the Instrument Owner

The person who owns and uses the instrument or authorises its use by others is the owner of the instrument and as such is responsible for the safety of all users of the instrument and third parties.

The owner of the equipment must inform users on how to use it safely in their workplace and how to manage potential risks and must also provide the required protective equipment.

When using chemicals or solvents, follow the manufacturer's safety data sheets.

In the following cases, the protection provided for the bath may be compromised. Liability for personal injury and

damage to property rests with the user if:

- The instrument is not used in accordance with the operating instructions;
- The device is used outside the field of application described here;
- The instrument is used with accessories or consumables not recommended by the supplier;
- The bath was serviced and repaired by a person not authorised by the supplier;
- The user makes unauthorised modifications to the device.

## 2 General Warnings

	Observe general safety warnings. This product should only be used by qualified personnel.
	Do not use the instrument more than 99 minutes continuously and wait at least 30 min before next use, otherwise the life of the ultrasonic bath may be reduced. Do not block or restrict ventilation slots.
	This instrument is intended for ultrasonic cleaning of objects immersed in liquids only. <b>Do not use this instrument without liquid.</b>
	Connect this unit to an earthed electrical socket. Do not dismantle the unit! Maintenance must only be carried out by authorised personnel! Use this product on a stable, dry work surface! Use distilled water only! Disconnect the power cable in case of malfunctions!
	Do not use the unit with flammable material!
	Do not use acid or chlorine materials in the stainless steel tank. Do not place objects directly in the tank, but use the basket!
	Do not touch the liquid when operating the instrument. Do not move the tub, basket, objects, lid or accessories during operation.
	Ultrasonic cleaning can produce disturbing noises. However, within the tolerance ranges established by current regulations. Use personal hearing protection.
	Exclusion of liability: The manufacturer cannot be held liable for damage to persons, machines or cleaning objects caused by improper use and failure to observe the operating instructions. The operator is responsible for the instructions of the operating personnel. If you have any questions, please contact the supplier.
	Before filling the tank, make sure that the ultrasound and heating are switched off and that the tap, if present, is closed. Use distilled or deionised water.
	Do not pour boiling water into the tub.
	Water without any additives is not suitable for ultrasound treatment. Giorgio Bormac recommends the use of the Mucosol preparation.
	The filling level must still reach or slightly exceed the appropriate operating level indication. If the level is lower, there is a risk of damage to the ultrasonic bath.
	Do not use flammable liquids (e.g. petrol, solvents) and no chemicals that contain or release chloride ions (some disinfectants, household cleaners and dishwashing detergents) for ultrasonic treatment in the stainless steel tank.
	When working with aggressive preparations in the collecting tank or suspension tanks, avoid splashing in the contact liquid or on stainless steel surfaces, if necessary replace the contact liquid immediately, clean the surfaces and dry them.
	If preparations are used, the safety instructions in the respective product information must be strictly adhered to.
	Replace used ultrasound treatment fluids, do not top up.
	Take the temperature of the liquid inside the tank into consideration when cleaning temperature-sensitive items.

	Ultrasound can damage sensitive surfaces when operated for an extended period and especially when operating at low wash frequencies.
	If necessary for the cleaning treatment, the liquid can be pre-heated in an external heating unit.
	Do not use the lid during a long cleaning process, as the temperature would exceed the set temperature.

### 3 Intended use

Ultrasonic baths are intended for the ultrasonic treatment of aqueous liquids.

They work based on low-frequency ultrasound and their uses are manifold. The main use is the intensive but gentle cleaning of objects of different shapes, sizes and types. Alternatively, it is possible to support and accelerate chemical processes in the ultrasonic bath e.g. in test treatment and preparation.

Ultrasonic treatment always takes place in conjunction with a suitable preparation that is poured into the bath liquid. For proper use, it is also necessary to have at least a basket or other receptacle in which to place objects during ultrasonic treatment. This is the only way to ensure optimal ultrasonic propagation.

The ultrasonic bath is fed at the rear of the instrument, and operation usually takes place on a table.

ArgoLab ultrasonic baths are used for a variety of applications and areas, listed below:

Airbrush	Calligraphy pens / nibs	Dental / surgical instruments
Geological & Metallurgical	Ink Jet Printer Cartridges	Laboratory glassware
Metals/fibre filters	Electronic circuits and components	Nozzles
Production line cleaning	Watchmaking	Automotive / aviation components
Pens / Nibs	Fuel injectors	Hypodermic needles
Jewellery	Lenses and other optical components	Rubber and metal seals
Moulds	Printed circuits	Industrial scientific instruments

### 4 CE Compliance

ArgoLab digital ultrasonic baths meet the European Union's CE marking criteria.

### 5 Guarantee

Thank you for purchasing an ultrasonic bath. Under normal conditions of use, this instrument is guaranteed for a period of 24 months from the date of purchase.

The guarantee is only valid if the purchased product remains original.

It does not apply to any product or parts thereof that have been damaged due to incorrect installation, improper connections, misuse, accident or abnormal operating conditions.

We accept no liability for damage caused by use not in accordance with instructions, lack of maintenance and any unauthorised modifications.

### 6 Unpacking the instrument

Carefully unpack the ultrasonic bath and accessories and check the components for damage in transit. If any damage or defect is found, report it promptly in writing to the responsible carrier and retailer.

**Note: When** sending the instrument for repair, the user is obliged to pack it in its original packaging and if this is not available, to pack it appropriately for transport.

Any damage caused by inappropriate packaging will not be covered by warranty.

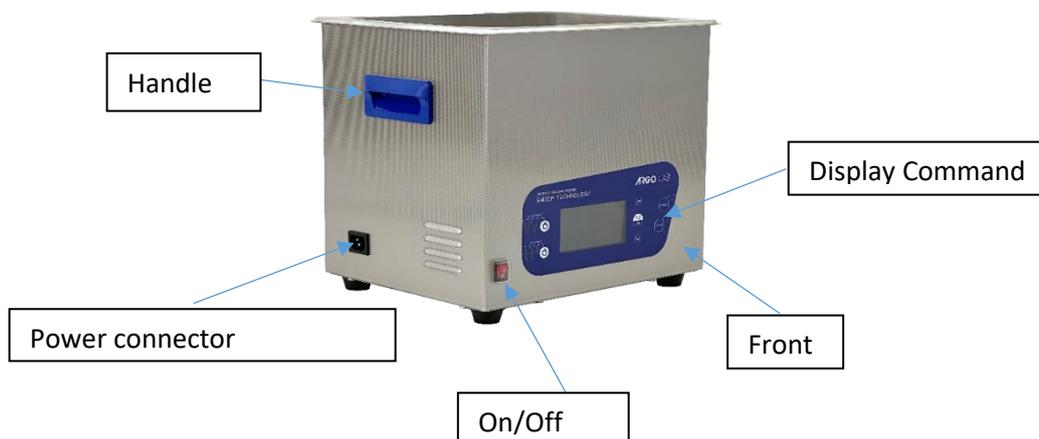
## 6.1 PACKAGE CONTENTS

		
Ultrasonic bath	Lid	Basket
		
Power cable		User's Manual

## 7 Principle of Operation

The ultrasonic cleaning process consists of creating high-frequency waves in a tank containing water and detergents. The vibration waves propagate uniformly throughout the entire volume of the tank, reaching the surface of the objects to be cleaned, forming compression and decompression waves that give rise to 'micro-bubbles' (cavitation), which implode reaching very high pressures. This phenomenon favours the detachment of dirt from submerged objects.

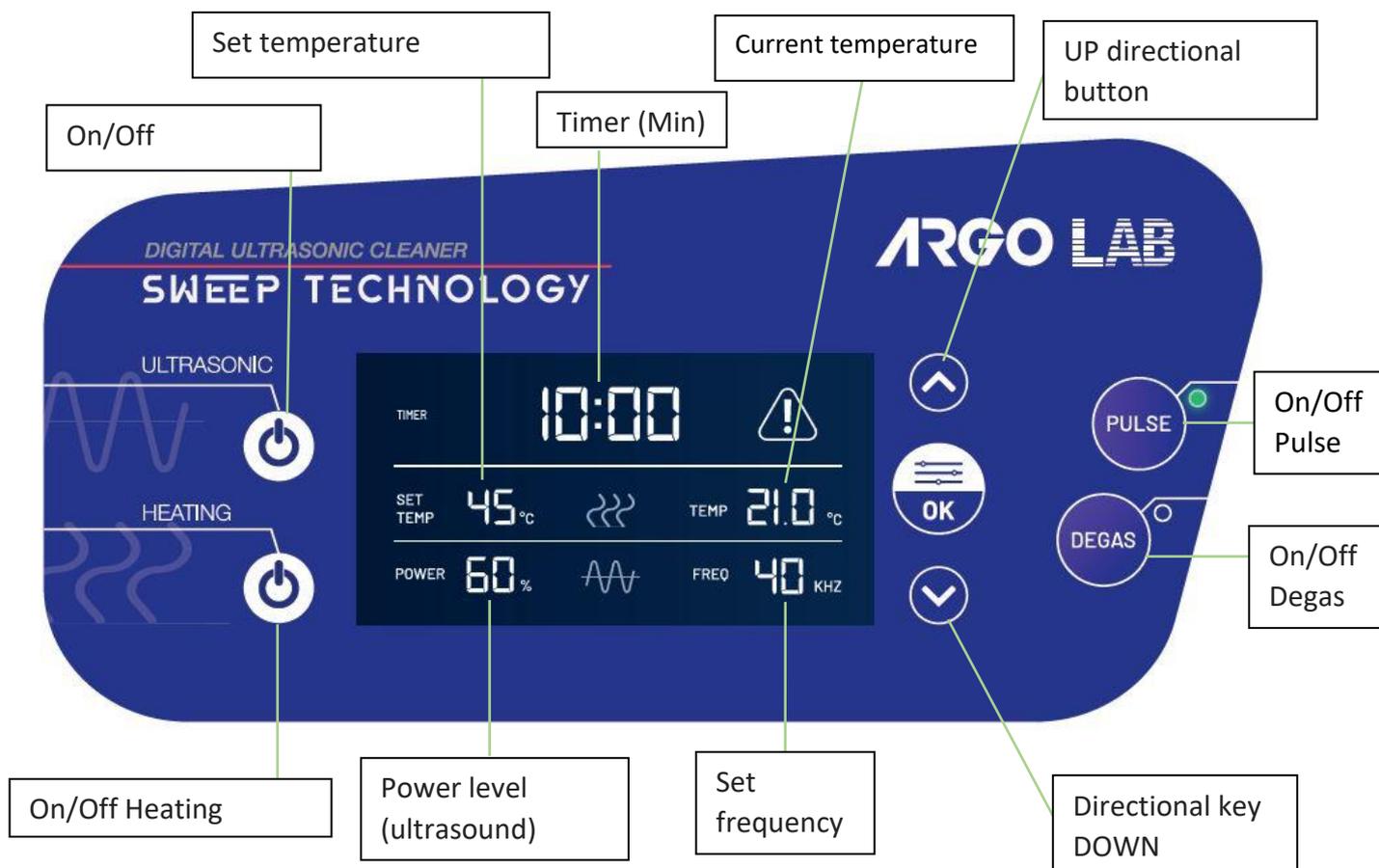
### 7.1 Instrument Parts



## 8 TECHNICAL SPECIFICATIONS

Features	DU-06	DU-32S	DU-45S	DU-65S	DU-100S	DU-220S	DU-450S
Capacity (L)	0,6	3,2	4,5	6,5	10,0	22,0	45,0
Maximum temperature (°C)	-	60	60	60	60	60	60
Timer (Min)	3 - 6	1 - 99	1 - 99	1 - 99	1 - 99	1 - 99	1 - 99
Power control	-	10-100 % (10 steps)					
Ultrasound frequency (kHz)	40	40/28	40/28	40/28	40/28	40/28	40/28
Tank interior dimensions (L x W x H) mm	150 x 85 x 65	240 x 135 x 100	300 x 150 x 100	300 x 150 x 150	300 x 240 x 150	500 x 300 x 150	500 x 300 x 150

## 9 Display and Controls



## Sweep Technology:

ArgoLab digital ultrasonic baths incorporate the innovative SWEEP technology that has been specifically implemented to increase the efficiency and performance of the instrument by having a more effective process and a more satisfying result than normal ultrasonic cleaning.

This technology ensures a more even distribution of the acoustic field by shifting the maximum sound pressure zones and results in a more uniform ultrasonic intensity in the washing liquid.

### 9.1 Setting the temperature

1. Press the  button until the 'SET TEMP' value flashes.
2. Set the desired value using  or  and press  to confirm.
3. Press the button  'Heating' to turn on or off the heating of the water inside the tank. When the heating is on,  will flash indicating that the liquid temperature is rising and will become steady on the display when the set value is reached. It will disappear from the display when the heating is switched off.

### 9.2 Setting the timer

1. Press the  button until the 'TIMER' value flashes.
2. Set the desired value using  or  and press  to confirm.

### 9.3 Multifrequency

1. Press the  button until the % value of 'FREQ' flashes to select the frequency.
2. Select 28 kHz or 40 kHz using  or  and press  to confirm.  
When the ultrasound is switched on, the set frequency value flashes on the display.

### 9.4 Setting the Ultrasonic Power

1. Press the  button until the 'POWER' value flashes.
2. Set the desired value (10%, ...,100%) using  or  and press  to confirm.  
 flashes when the ultrasound is switched on and disappears from the display when it is switched off.  


### 9.5 PULSE

Special function to intensify the ultrasonic cleaning action that generates a significantly increased periodic ultrasonic power compared to normal power, followed by zero power.

Recommended when stubborn dirt is firmly attached to the surface of the object.

Press, in addition to the ultrasonic button , the **PULSE** button  the green LED near the button indicates that this function is activated.

This function can be activated at any time, even during operation.

## 9.6 DEGAS

Special function for removal of dissolved gases in washing liquids and degassing of samples.

By means of special modulation and timing of the ultrasound waves, gas bubbles in the samples or washing liquid are released into the atmosphere quickly and efficiently.

In addition to the ultrasonic button, press the **DEGAS** button . The LED in the key field indicates that this function is activated.

This function can be activated at any time, even during operation.

**The DEGAS and PULSE functions cannot be activated simultaneously.**

## 10 CARE AND MAINTENANCE

	<p>Maintenance or repair work may only be carried out by specialised and authorised personnel. Disconnect the power cable before carrying out maintenance work! Do not soak the device in water! Contact the supplier of the product for repairs.</p> <p>The manufacturer accepts no liability for any damage caused by unauthorised tampering. It is recommended to keep the supporting surface and body of the instrument dry, to avoid electrical injuries and damage to the instrument.</p>
  	<p>Deposits in the stainless-steel tank must be removed frequently and gently using non-abrasive objects. Above all, remove abrasive particles left behind by previous cleaning processes. Replace the cleaning fluid and cleaning agent if necessary. Do not keep the ultrasound switched on when the cleaning cycle is finished.</p>
	<p>The instrument can be cleaned with a mild detergent or limescale remover, do not use aggressive cleaning agents and abrasive objects.</p>
	<p>If the instrument is used in the medical sector, it is necessary to disinfect the tank and surfaces regularly for hygienic purposes (use surface disinfectants).</p>

## 11 CLEANING PROCESSES

Observe all national safety regulations that may apply to the following instructions.

The operator is responsible for controlling the cleaning result.

During the ultrasonic process, the liquid heats up even when the heating is switched off, reaching significant temperatures. **DO NOT** put your hands into the liquid.

Contact with fluctuating liquids could cause damage to health. Do not put your hands in the liquid.

Set the cleaning time, switch on the heating, wait for the water to reach temperature and switch on the ultrasound.

Check the result and repeat the cleaning process if necessary.

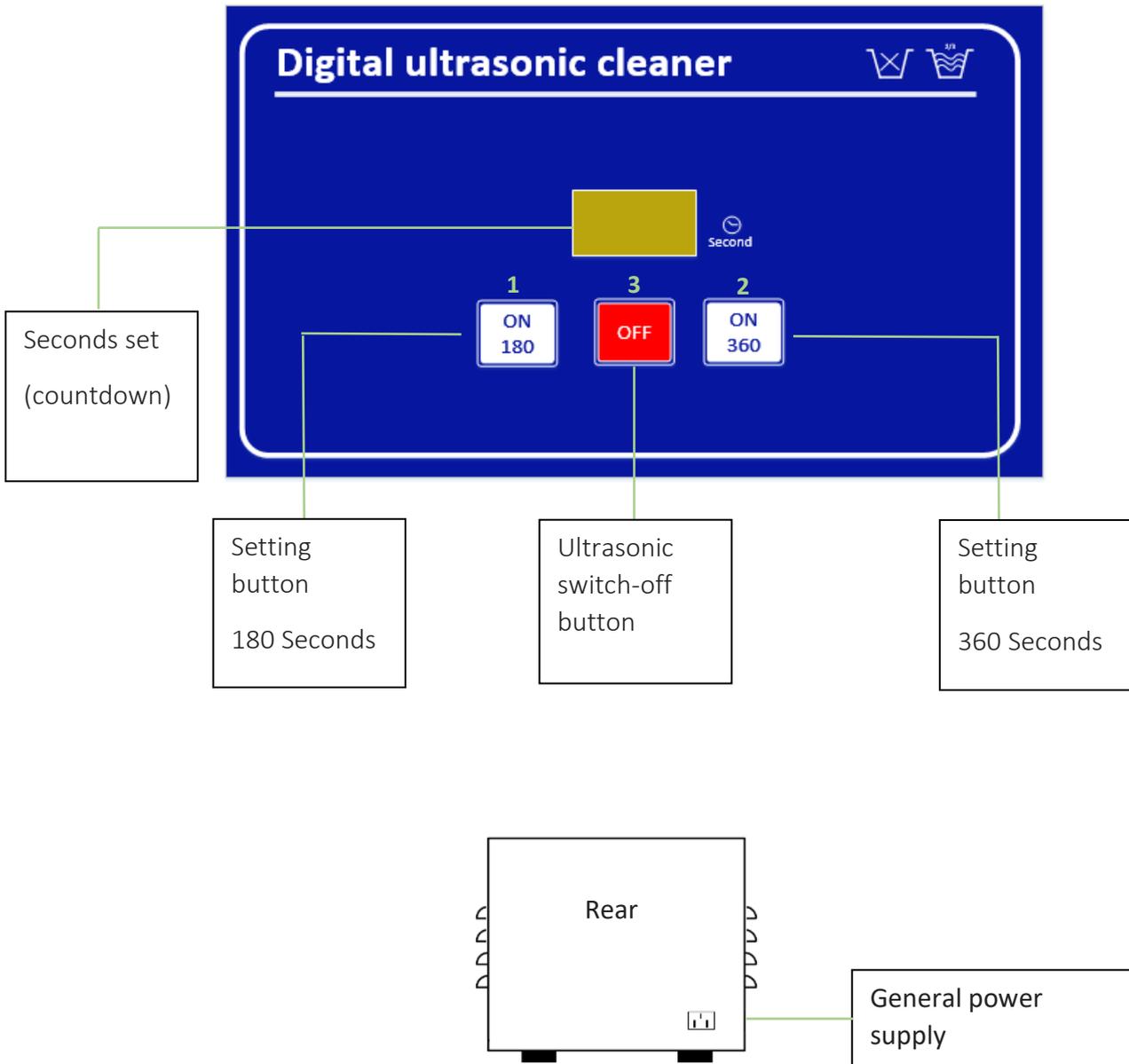
Rinse objects if necessary.

## 12 Troubleshooting Guide

Defect	Possible causes	Resolution
The instrument does not switch on	Missing supply voltage Damaged power cable Electronic component failure	Check that the power cable is not damaged and that the socket is supplied with mains voltage Contact the supplier's technical support.
Ultrasound does not work Noisy ultrasounds Weak ultrasounds	Electronic component failure Insufficient water level	Fill the tank with distilled water up to the 'operating level'. Contact the supplier's technical support
Does not heat Set temperature not reached Over-temperature	Electronic component failure Defective temperature sensor	Contact the supplier's technical support
Unsatisfactory washing result	Missing or inappropriate detergent	Add or replace detergent.

	Missing or inadequate heating Insufficient washing time	Adequately heat the flushing liquid. Repeat the interval or increase the washing time.
Missing instrumental functions	Electronic component failure	Contact the supplier's technical support

### 13 DU-06 (Instrument without heating)



#### Setting ultrasonic

Press the  button (1) to set 180 seconds of ultrasound.

Press the  button (2) to set 360 seconds of ultrasound.

Press the  button (3) to stop the ultrasound.

## 14 Disposal of electronic equipment



This equipment is subject to regulations for electronic devices. Dispose of in accordance with local regulations.

### Redazione a cura del Mandatario:

Giorgio Bormac s.r.l.  
Via della Meccanica, 25  
41012 Carpi (MO)  
P.Iva 02309180368  
Tel. +39 059 653274  
Fax +39 059 653282  
Email: [info@giorgiobormac.com](mailto:info@giorgiobormac.com)

