QC Ultrasonic Cleaner

Operators Handbook

Full operator instruction for the model QC ultrasonic

IMPORTANT

Please refer to this operator's handbook BEFORE operating the equipment

Walker Electronics Limited

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your solution in ultrasonics . . .

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what is Ultrasonic cleaning

The range of the human ear is from about 16 Hertz (16Hz) to 16 kilo Hertz (16kHz), Middle C is 216 Hertz, a grasshopper call around 7 kilohertz and a bat signal about 70 kilohertz. Beyond human audible range is called 'Ultrasonic'. Most ultrasonic cleaners operate in the range of 30 to 50 kHz; ours have an operating frequency of 44-52 kHz.

Ultrasonic cleaners function by producing sound waves that are transmitted into the tank and cleaning solution. These waves create millions of microscopic bubbles, which collapse or 'implode', releasing large amounts of energy, which scrub the surface clean. This process is called 'Cavitation'.

Ultrasonic cleaners have many applications
including the cleaning of:

Dental Instruments
Dentures
Endoscopes
Veterinary Instruments
Chiropody Instruments
Clocks and Watches
Jewellery
Printed Circuit Boards ... and many more.

A 'generator' located within the ultrasonic cleaner develops the high frequency power. This supplies the power to the 'transducer', which creates the sound waves in the tank. Apart from the strength of the ultrasonic waves, an equally important part of the cleaning process is the solution used. An incorrect solution will slow down the cleaning process and cause poor results.

before you operate your ultrasonic cleaner

To enable you to get the best results, and for your own safety, it is IMPORTANT to read this handbook.

Please unpack your ultrasonic cleaner carefully and check the contents. The box should contain:

- 1 x QC ultrasonic cleaning unit
- 1 x stainless steel lid
- 1 x stainless steel basket
- 1 x Operator's handbook (this handbook)
- 1 x Periodic testing guide (HTM0105)
- 1 x 1m IEC mains lead
- Sample cleaning fluid

If any of the above items are missing please contact Walker Electronics Limited quoting the serial number of your machine.

As stated above, your ultrasonic cleaner is supplied with a 1m lead fitted with an ASTA approved UK moulded plug. The plug is fitted with a 5 amp fuse that complies with BS1362. The lead is also fitted with an IEC socket.

If the plug does not fit your sockets please call 01636 892410 and speak to a member of our staff who will advise you accordingly.

Please read this handbook thoroughly to familiarise yourself with the controls before operating the equipment.

installing and operating your ultrasonic cleaner

The ultrasonic cleaner should be mounted on a level surface. It must not be exposed to extreme temperatures, moisture, strong vibrations, and dusty or corrosive environments.

To operate the unit first place the appropriate fluid in the tank. The fluid level should always at the level of the filling ridge in the tank.

Plug the 3 pin plug of the IEC cable into a suitable socket and the other end into the unit and switch the socket on.

WHEN SWITCHING THE MAINS POWER ON AND OFF ENSURE THAT YOUR HANDS ARE DRY

The timer may then be set by turning the timer knob clockwise until the pointer indicates the desired time for ultrasonic agitation. The timer range is 0 to 30 minutes, and any time in between may be set. The unit may also be operated continuously by turning the knob anti-clockwise to the 'OO' symbol. Should you wish to cease the ultrasonic agitation, the timer knob may be turned until the pointer indicates 'O'. When the unit is in operation the green neon will be illuminated.
The time required for a cleaning cycle depends on the following:

- The type, size and number of components being cleaned
- The type of contamination being removed
- The type of cleaning solution being used

For most medical/dental applications we suggest that a 3-minute cycle is initiated and more time added if required up to a maximum of 6 minutes.

As the ultrasonic energy is generated in the bottom of the tank, only one layer of components/instruments should be cleaned at a time. Pre-soaking of components may assist the ultrasonic cleaning process.

IMPORTANT

The unit is fitted with a 'Cavitation Heating System'.

This means that whilst the unit does not use a conventional heating element the circuitry that operates transducer has been designed to create strong cavitation and therefore heat the cleaning fluid.

In order to try and prevent excessive fluid temperature the unit will 'pulse' when it reaches approximately 50°C.

This feature is not intended to prevent coagulation of proteins in dental applications. Separate monitoring must be used for this purpose.

This pulsing is not detrimental to the unit, however, if it is important to you that you don't clean items in higher temperatures you should turn the unit off and either replace the cleaning fluid or allow the unit to cool. If the unit is allowed to pulse for prolonged periods the temperature will continue to increase well above 50°C and could eventually result in the self-resetting thermal cut out operating. Should this protection device operate the Green Neon on the front of the unit will remain illuminated, however, no ultrasonic agitation will be heard. If this should occur, unplug the unit and allow it to cool. The unit will self-reset within 15 minutes.

A transducer overload device also protects the unit. This device may occasionally operate during normal use. It can be identified by an occasional 'pulse' during a normal cycle. This indicates that an incorrect solution is being used, the fluid level is incorrect or the transducer is self-protecting.

Water alone will not respond to ultrasonic energy when it contains dissolved gas or contaminants. Water drawn from the main will contain a quantity of dissolved gas. Fresh water/solution should ALWAYS be 'de-gassed' by operating the ultrasonic unit containing the fresh water, basket and cleaning solution for 6 minutes. After degassing avoid unnecessary agitation of the fluid as this will introduce air. ALWAYS replace the fluid when contaminated.

alternative cleaning methods

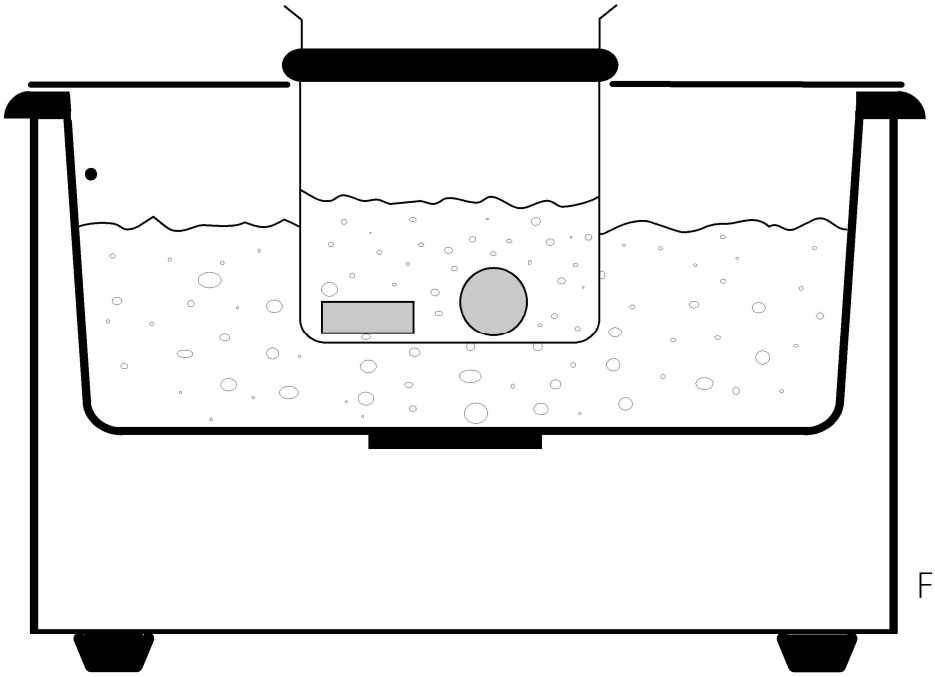


Fig.1

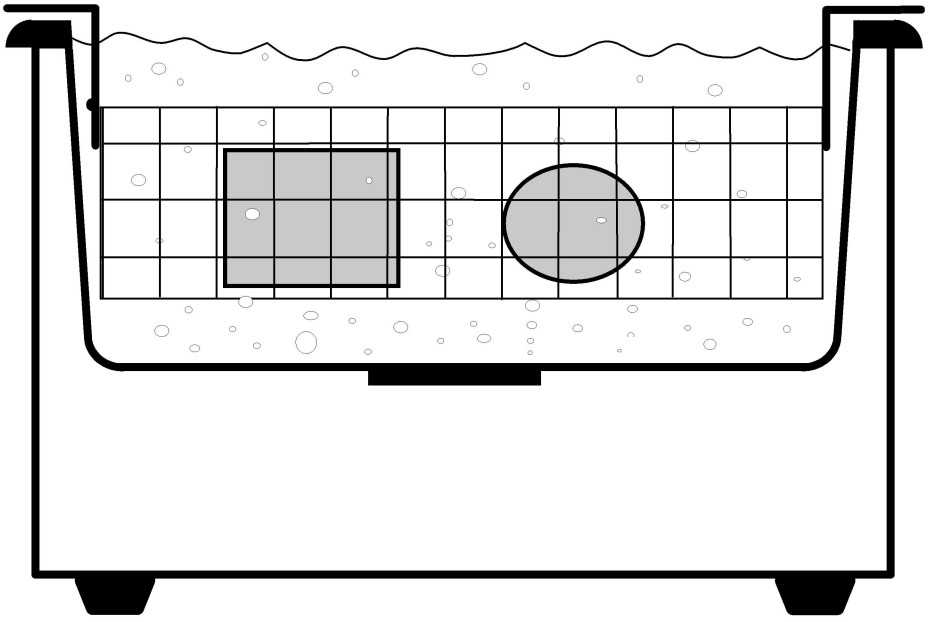


Fig.2

alternative cleaning methods

Fig. 1 shows cleaning in a 600ml beaker.

The tank should be half filled with fluid. It is most important that the fluid is NOT water alone, but water and detergent or another cleaning fluid. The stand should be placed on top of the unit with the locating lugs pointing down. Beaker stands are available in single and double beaker formats. The rubber ring should be slid up or down the beaker so that when put into the beaker stand the base of the beaker is between 21/2cm (1") and 5cm (2") below the surface of the fluid but not touching the base of the tank. CARE SHOULD BE TAKEN not to lower the beaker too far as the fluid may flow over the top of the tank. The ultrasonic cleaner may then be operated (Refer to pages 4 & 5).

This method is particularly useful for cleaning small components.

The single beaker stand and the basket can be used simultaneously, however the double beaker stand must be used without the basket.

Fig.2 shows the cleaning method using the basket*

The fluid level should always at the level of the filling ridge in the tank. The item/s to be cleaned should be placed in the basket, which should be then gently lowered into the tank.
CARE SHOULD BE TAKEN when lowering the basket as the fluid could flow over the top of the tank. The ultrasonic cleaner may then be operated (Refer to pages 4 & 5).

* The basket supplied may vary from the one pictured

Do's and Don'ts with our Ultrasonic Cleaners

PLEASE READ THE FOLLOWING VERY CAREFULLY AS FAILURE TO COMPLY MAY INVALIDATE YOUR GUARANTEE

1. DO use the correct fluid for your application. DO NOT use water alone in the tank when operating the unit as a wetting agent is required for correct transference of ultrasonic energy.
2. DO NOT operate the unit without fluid in the tank. Always ensure the tank is filled to the filling ridge.
3. DO keep the tank free from large amounts of sediment.
4. DO NOT drop the unit or experience it to shock or impact.
5. DO NOT immerse the unit in water or any other liquid.
6. DO NOT use acid, bleach or any corrosive substance in the stainless-steel tank, as they may attack the metal.
7. DO NOT use any highly flammable substances in the tank.
8. DO NOT place your hands in the fluid while the unit is operating. When using any cleaning fluid please read the directions before use. Material Safety Data Sheets are available for all Walker Electronics Limited fluids online at www.walkerelectronics.co.uk
9. DO NOT pour hot or boiling water into the tank as this could cause thermal shock damage to the transducer.
10. DO keep the lid on during use and at all other times when feasible. This will prevent splashes and reduce evaporation and vaporisation of the fluid.
11. DO NOT drop any item into the tank as this may cause damage to the transducer. Always place the item/s gently into the tank and use the basket whenever possible.
12. DO disconnect the mains supply when the unit is left unattended.

13. DO disconnect the mains plug or isolate the supply before:
    a. Emptying fluid from the tank
    b. Filling the tank with fluid
    c. Moving the unit
    d. Removing the base screws (NO USER SERVICEABLE PARTS ARE CONTAINED IN THE UNIT.)
14. DO keep the front panel dry. NEVER allow fluid to run down the unit case or around the IEC socket area.
15. DO NOT operate any switches when your hands are wet.
16. DO use the correct accessories with the unit. DO NOT use any glass or other containers in place of the recognised beaker.
17. The unit should be operated in an environment as follows: Temperature: 5°C to 40°C. Humidity: 10% to 80% (non-condensing)
18. After periods of operation the top of the tank and fluid may get warm. This is quite normal.
19. To clean the case and tank wipe with a lightly oiled cloth.
20. DO NOT move the unit whilst in use or connected to the mains supply in order to avoid spillage and/or a possible shock hazard.
21. In the event of failure/emergency, disconnect the mains supply by removing the plug from the mains socket.
22. It is advised that during operation the minimum distance between any person and the equipment is not less than 1 metre.
23. DO NOT Flash test this equipment.
24. When the unit is used in Dentistry, refer to HTM0105 for instructions on daily, weekly, quarterly and yearly test or visit www.walkerelectronics.co.uk for more information

IF THE EQUIPMENT IS NOT USED AS SPECIFIED IN THIS HANDBOOK THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.
THE ABOVE LIST IS NOT EXHAUSTIVE.

guarantee

This unit has been carefully manufactured and tested in Nottinghamshire using a high percentage of quality assured components sourced from the UK wherever possible. It is guaranteed against faulty workmanship and materials for a period of 1 year from the date of purchase. In addition, the Transducer Bonding is guaranteed for a further 3 years.

In the unlikely event that a failure should occur, the unit will be repaired or replaced* free of charge when returned postage paid to the address below within the guarantee period. This guarantee DOES NOT include damage or failure resulting from misuse, damage in transit or failure by the user to comply with the enclosed list of Do's and Don'ts (This list is not exhaustive). Your statutory rights under common law are in no way affected by this guarantee.

For service in or out of the guarantee period please return the unit postage paid to:

Service Department,
Walker Electronics Limited,
Collingham, Newark,
Nottinghamshire, NG23 7LA, U.K.
Tel: 01636 892410
sales@walkerelectronics.co.uk

When returning your unit please ensure that the package contains a covering letter stating when and where you purchased the unit and a description of the problem encountered. If the unit is within the guarantee period please enclose proof of purchase. You are advised to keep the original packaging in case of repair or return for service.

* Repair or replacement is at the discretion of the manufacturer.

In accordance with its policy of progressive product design, Walker Electronics Limited reserves the right to change product specifications without prior notice.

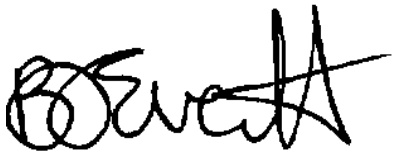
CE Declaration of conformity

Walker Electronics Ltd
Collingham, Newark
Nottinghamshire, NG23 7LA, UK

Declare that our ultrasonic cleaning bath model QC complies with the following standards:

EMC : Emissions to EN50081-1:1992
Immunity to EN50082-1:1997

Test	Standard & method	Result
Conducted emission	EN55022:1994 +A1:1995 +A2:1997 TMS19	PASS
Harmonic emissions	EN6005-2:1987 TMS17	PASS
Flicker	EN60555-3:1987 TMS18	PASS
Radiated emissions	EN55022:1994 +A1:1995 +A2:1997	PASS
Discontinuous emissions	EN55014:1993 Inc AMD1 TMS5	PASS
Tested by	York EMC Services Ltd York, UK	
Certificate No.	C/99/127 dated 10th August 1999	



Brian J Everitt
Managing Director

ultrasonic cleaner specifications

Walker Electronics Limited manufactures a range of ultrasonic cleaning baths. All are manufactured with a stainless-steel case and aluminium chassis. The stainless steel is manufactured to BS1449, the aluminium to BS1470 and the stainless-steel tank to BS304.
All units comply with BSEN 61010-1.

Model type	:	QC
Rated voltage	:	220-240 Volts AC 50-60 Hz
Tank dimensions*	:	240mm x 130mm x 100mm
External dimensions*	:	265mm x 161mm x 195mm
Working capacity	:	2.0 litres
Maximum capacity	:	2.5 litres
Weight*	:	2.15kg (excluding accessories and mains lead)
Typical generator peak output**	:	375 watts
Typical power consumption**	:	200 watts
Operating frequency**	:	49 kHz +/- 2 kHz

* Dimensions and weight are approximate. Internal dimension is taken at the top of the tank. Dimensions at the base are smaller.

**Dependent on tank loading, fluids used and mains voltage.

Version 12 -UK dated 29th November 2022

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