Meadows & Passmore Ltd

HOROLOGICAL SUPPLIERS
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ULTRASONIC CLEANING BATH

OPERATOR'S HANDBOOK

0713 000115

CAVITATION HEATING SYSTEM

MODEL 80T

IMPORTANT

PLEASE REFER TO THIS HANDBOOK *BEFORE* OPERATING THE EQUIPMENT

Ultrasonic cleaning

What is ultrasonic cleaning?
The range of the human ear is from about 16 Hertz to 16 kilo Hertz, 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 kilohertz; ours have an operating frequency of 30-40 kilohertz. 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. Your ultrasonic cleaner is supplied with a fitted plug, which complies with BS1362 and is fitted with an ASTA approved 3-amp fuse. If the plug does not fit your sockets a new plug can be fitted.

Fitting a different plug

Cut off the old plug and **THROW IT AWAY - DO NOT** insert it into a socket elsewhere, as this could cause an electric shock hazard. The wires in the mains lead are coloured in accordance with the following code:

Green and yellow	: Earth
Blue	: Neutral
Brown	: Live or Line

If you fit your own plug the colours of these wires may not correspond with the identifying marks on the plug terminals. This is what you have to do:

1. Connect the green & yellow wire (Earth) to the terminal in the plug marked ‘E’ or the earth symbol or coloured green or green & yellow.
2. Connect the blue wire (Neutral) to the terminal in the plug marked 'N', or coloured blue or black.
3. Connect the brown wire (Live or Line) to the terminal marked 'L', or coloured brown or red.

The replacement plug must then be fitted with a 3 Amp ASTA approved fuse to BS1362.

If you experience any problems fitting the plug, either consult a qualified electrician, or return the unit to our service department.

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 level of fluid should be sufficient to cover the components being cleaned, but not so full as to flow over the top of the tank. There should be a minimum depth of 7cm of fluid in the unit during operation.

Plug the unit into a suitable socket and switch 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 anticlockwise to the OO symbol. Should you wish to cease the ultrasonic agitation, the timer knob may be turned until the pointer indicates OFF. When the unit is in operation the green neon will be illuminated. The time required for a cleaning cycle depends on the following:

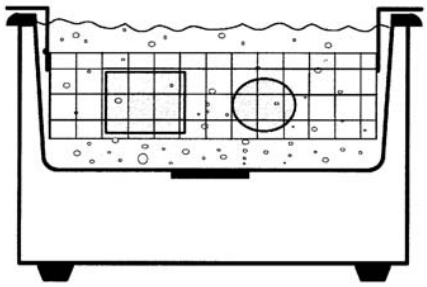
- The type and number of components being cleaned
- The type of contamination being removed
- The type of cleaning solution being used

We suggest that a 5-minute cycle is initiated and more time added if required. Pre-soaking of components may assist the ultrasonic cleaning process.
As the ultrasonic energy is generated in the bottom of the tank, only one layer of components should be cleaned at a time.

IMPORTANT

The unit is fitted with a 'Cavitational Heating System' or CHS.
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 in the cleaning fluid.
In order to prevent the temperature exceeding approximately 55°C, when the unit reaches this temperature the unit will start to 'pulse'. This pulsing is not detrimental to either the unit or the cleaning process and may even improve the cleaning result.
Should you wish to stop the pulsing either replace the cleaning fluid or allow the unit to cool.
The circuitry is also protected by a self-resetting thermal cut out. Should this protection device operate the Green Neon on the front of the unit will remain illuminated, however, no ultrasonic agitation will be heard. The unit will self reset within 3 minutes.
A transducer overload device also protects the unit. This device may occasionally operate during normal use. 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. This water can be 'de-gassed' by operating the ultrasonic unit containing the 'fresh' water for 5 minutes. After degassing avoid unnecessary agitation of the fluid as this will introduce air. ALWAYS replace the fluid when contaminated.

FIG. 1



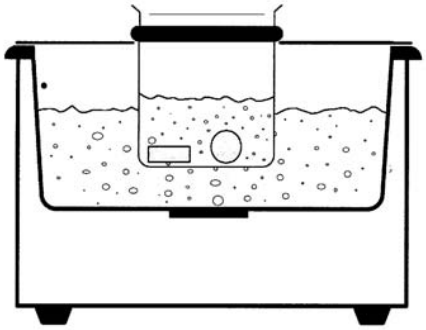


FIG. 2

Various Cleaning Methods

Fig.1 shows the cleaning method using the basket.
The tank should be filled with sufficient fluid to cover the components being cleaned (minimum depth of 7cm) but not so much as to flow over the top of 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

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Fig. 2 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

This method is particularly useful for cleaning small components.

The single beaker stand and the basket can be used simultaneously.

Basic 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 there is a minimum depth of 7cm.

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 place your hands in the fluid while the unit is operating. When using any cleaning fluid please read the directions before use. COSHH data sheets are available for all cleaning fluids.

8) DO NOT pour very hot or boiling water into the tank as this could cause damage to the transducer.

9) DO keep the lid on during use and at all other times when feasible. This will prevent splashes and reduce evaporation of the fluid.

10) 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.

11) DO disconnect the mains supply when the unit is left unattended.

12) DO disconnect the mains plug or isolate the supply before:
- Emptying fluid from the tank
- Filling the tank with fluid
- Moving the unit
- Removing the base screws*

*NO USER SERVICEABLE PARTS ARE CONTAINED IN THE UNIT.

13) DO keep the front panel dry. NEVER allow fluid to run down the unit case or around the cable inlet area.

14) DO NOT operate any switches when your hands are wet.

15) DO NOT use any highly flammable substances in the tank.

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°Cto40°C
Humidity : 10% to 80% (Non-condensing)

18) After long periods of operation the top of the tank and fluid may get warm. This is quite normal.

19) No maintenance is required. 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 or overflow.

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.

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

Guarantee

This unit has been carefully manufactured and tested in the EC using a high percentage of quality assured components. It is guaranteed against faulty workmanship and materials for a period of 12 months from the date of purchase. In addition the Transducer Bonding is guaranteed for a further 4 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:

Meadows and Passmore
Horological Suppliers
1 Ellen Street
Portslade, Brighton,
East Sussex BN41 1EU, England

When dialling from outside the U.K.: Tel:+44 1273 421321. Fax: +44 1273 421321
When returning your unit please ensure that the package contains a covering letter stating when you purchased the unit and a description of the problem encountered. If the unit is within the guarantee period please enclose proof of purchase.

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

Ultrasonic cleaner specifications

All ultrasonic cleaning baths 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 IEC1010-1.

Model type	: 80T
Rated voltage	: 220-240 Volts AC 50-60Hz
Tank dimensions*	: 300 x 145x 150mm
External dimensions (inc. handles)	: 365 x 190 x 245mm
Working capacity	: 4.7 litres
Maximum capacity	: 5.7 litres
Weight	: 3.7kg
Typical generator peak output**	: 360 watts
Typical power consumption**	: 180 watts
Operating frequency*	: 47 kHz +/- 2 kHz

* Dimensions at top of tank greater than those at base and are approximate

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

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