User Manual

LNC884

VARITHERM WAX BATH
Model 17

CE
1639

OM884EN Iss 21

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General Information

This manual provides the necessary information for the installation and operation of the Varitherm Wax Bath.

These instructions must be studied before putting the unit into operation.

The information contained in this manual is subject to change without notice.

It is intended that the Varitherm Wax Bath is only used by qualified health professionals such as trained physiotherapists.

Record of Amendments

ISSUE	COMMENTS	DATE
8	Revised	05/07/2005
9	Revised Company Name	04/10/2006
10	Revised	01/10/2007
11	EMC Tables Added	05/02/2008
12	Revised	28/09/2010
13	Info. for Thermal Switch added	27/09/2011
14	Operating instructions updated	22/06/2012
15	D of C amended	09/01/2014
16	D of C revised	26/06/2014
17	Technical corrections	07/09/2016
18	Ind. & Service info revised	10/11/2016
19	Temp control amended	22/08/2017
20	Updated for new NB number	20/04/2020
21	Updated for digital temperature control	04/04/2022

Warranty

This EMS Physio Ltd., (hereinafter called the company) product is warranted against defects in materials and workmanship for a period of two years from the date of shipment. The Company will at its option, repair or replace components which prove to be defective during the warranty period, provided that the repairs or replacements are carried out by the Company or its approved agents.

The Company will consider itself responsible for the effects on safety, reliability and performance of the product:-

only if assembly operations, re-adjustments, modifications or repairs are carried out by persons authorised by it,

only if the product is used in accordance with the instructions for use,

only if the electrical installation of the relevant room complies with the appropriate national requirements.

Should the product be returned to the Company for repair it must be sent carriage paid.

Consumable items, for example, electrodes, electrode covers and batteries, are excluded from the above warranty.

Introduction

Hot Wax therapy is one of several methods available to the therapist of applying heat directly to the surface of the body. Paraffin Wax supplied by EMS Physio Ltd melts at approximately 50° C. The wax is held at a temperature just above its melting point and the part of the body being treated is either immersed in the molten wax or the wax is poured onto it. Heat is transferred from the wax to the treatment area by thermal conduction.

Although temperatures above 50° may lead to skin damage under normal circumstances, immersing a hand or foot in paraffin wax at 50 to 55° C is quite comfortable. Water or oil at the same temperature would be uncomfortable and possibly damaging. However, when the skin comes into contact with the molten wax, the wax immediately next to the skin solidifies forming a thin insulating layer. This insulating layer, which is of low thermal conductivity, lowers the rate at which heat energy is applied to the skin to a level which is safe.

The latent heat of fusion of the wax is released as the wax solidifies, therefore, applying heat to the treatment area at constant temperature. In normal treatment several layers of wax are applied and further heat is released from the wax into the skin.

Another consequence of the solid layer of wax is that moisture is prevented from being lost from the surface being treated. At the end of treatment, when the wax is peeled off, the skin is left moist and soft.

The Varitherm Wax Bath comprises a resin tank which holds the paraffin wax, surrounded by an electrically heated, thermostatically controlled water jacket. The temperature of the wax is determined by the temperature of the water jacket and this is pre-set at 60°C at manufacture but can be adjusted by the user using the digital controller.
It is essential to check the actual wax temperature with a suitable thermometer prior to treatment.
Wax temperature may exceed 55°C.
Treatment should <u>not</u> be applied if the wax exceeds 60° C.

Indications for use

Paraffin wax may be used to provide heat therapy for relief from arthritic conditions, soft tissue injuries and general pain relief.

Contraindications

Areas with open wounds or broken skin must not be treated.

Patients with skin infections as heat may increase inflammation.

Patients with reduced thermal sensation.

Precautions

Paraffin wax is inflammable. Its flash point is in excess of 200° C. As the Varitherm Wax Bath heats the wax via a water jacket, heating of the wax to dangerous temperatures is prevented. Should a fire occur involving paraffin wax, CO_2, dry powder or foam extinguishers should be used. DO NOT USE WATER.

Wax spilt on floors can be extremely slippery. Spillages must be dealt with promptly and completely.

Paraffin wax is a petroleum hydrocarbon and its molten state will produce some fumes. Always use the Varitherm Wax Bath in a well ventilated area. When not in use always cover the tank with the lid provided.

Capacity and safe working load

Fill water tank with 17 litres water and top up as required.

Fill wax tank with no more than 18kg wax maximum.

Cross contamination

In addition to the above contraindications and precautions the risk of cross contamination may be reduced by the following measures:

Ensure all skin is thoroughly cleansed with a suitable antibacterial product prior to contact with the wax.

Dispose of used wax and do not return it to the bath.

Essential Performance

BSEN 60601-1 defines Essential Performance as:
"Performance necessary to achieve freedom from unacceptable risk"

Functions of the EMS884 Wax Bath, the absence or degradation of which could result in a hazardous situation are:

Temperature Control	53 – 68°C
Safety Cut-out (maximum temperature)	75±5°C

Technical Specification

Power Input	200-240 VAC 50/60 Hz
Power Consumption	3 kW
Protection Devices	15A circuit breakers in each supply line.
Alarm Indicator	Red Neon Lamp
Size (H x W x D)	410 x 440 x 760 mm
Water Capacity	17 litres
Wax Capacity	18 kg (Recommended 5kg to 10kg)
Weight (empty)	23 kg
Weight (fully loaded)	58 kg
Classification (EN60601-1)	Class 1, Type B

All information on model, serial number, and month/year of manufacture is located on the rear panel.

The Varitherm Wax Bath is supplied with a lid, a thermometer (to check the wax temperature) and this manual. Wax must be purchased separately.

The Varitherm Wax Bath has been designed to meet the requirements of BS EN60601-1:2001 “Medical Electrical Equipment, Part 1: General Requirements for Safety”.

Optional Accessories

Catalogue Number	Description
LNC885	Tubular steel stand for Varitherm Wax Bath
T1A	Thermometer
P11	Paraffin Wax

Installation

Upon receipt, check for any visible damage which may have occurred in transit. If any signs of damage are found then retain all packaging material and inform the carrier and the Company or its agent from whom the unit was purchased.

If not already fitted, connect a suitable plug to the mains cable. The plug must have provision for an EARTH (GROUND) connection. The mains cable has the following colour code, BROWN is LIVE (LINE), BLUE is NEUTRAL and GREEN/YELLOW is EARTH.

The Wax Bath lid is supplied, for ease of packaging, with the handle on the reverse side. Remove the two screws holding the handle and attach it to the correct side of the lid using the same screws.

The Varitherm Wax Bath must be positioned on a flat horizontal surface or on the optional stand.

Lift the water filler cover and fill with tap water until the water level is seen to be just above the inlet hole. The water capacity is approximately 17 litres.

Fill the wax container with 5 to 10kg of paraffin wax. The wax should be broken into small lumps to aid melting. Wax supplied by EMS Physio Ltd. is strongly recommended as melting point and correct operating temperature are highly dependent on the composition of the paraffin wax.

Connect the Varitherm Wax Bath to a suitable mains outlet capable of supplying at least 13A.

The Varitherm Wax Bath is now ready for use.

Controls and Markings

Varitherm Wax Bath Front View

The mains on/off switch is located on the front of the Varitherm Wax Bath (figure 1) and is a two-position rocker switch: up for on, down for off. It has a built-in green indicator lamp to show when the mains switch is on. It is marked with the recognised IEC Symbols for on and off. Also on the front of the unit is a red warning lamp. This lamp will illuminate if the safety thermostat has opened, indicating that the unit is too hot. This is usually because there is insufficient water in the unit. The safety thermostat can only be reset by using the pull-cord at the front of the unit (figure 1) after the temperature has returned to a safe level.

Between the warning lamp and mains switch is located the “Water Temperature Indicator” console.

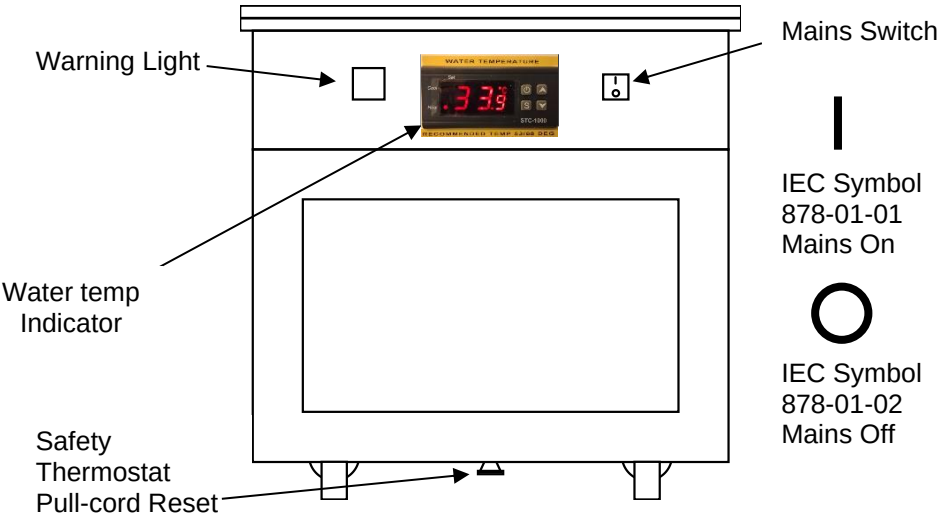


Figure 1 – Varitherm Wax Bath – Front View

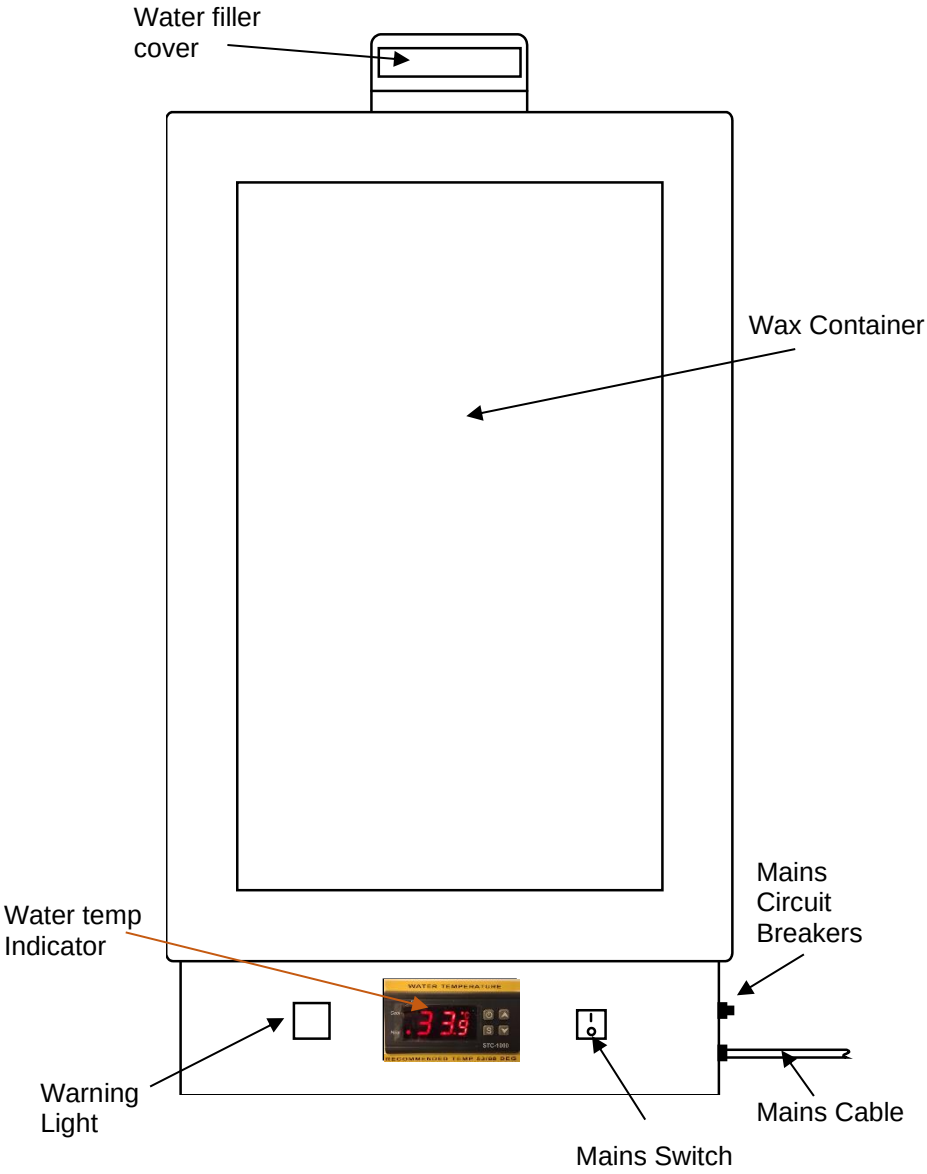
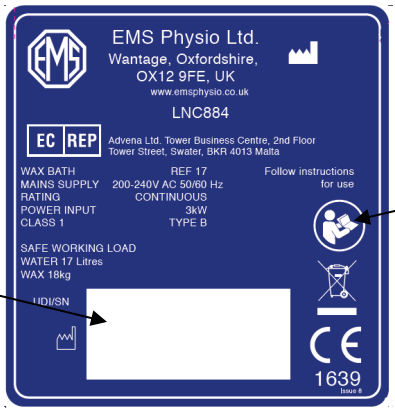


Figure 2 – Varitherm Wax Bath – Top View

The water filler cover is located at the rear of the unit (figure 2). A label reminds the user to check the water level daily.

On the rear of the unit is a label giving details of model, serial number, mains supply voltage and frequency (figure 3).

On the left side of the unit is a label showing symbols from Class B and Attention – consult accompanying documents (figure 4).



ISO Symbol 7010-M002
Attention, consult accompanying documents.

Serial number

Figure 3 – Label (Rear of Unit)

IEC Symbol 348
Attention, consult accompanying documents.

IEC Symbol 878-02-02
Type B Equipment

Figure 4 – Label (Side of Unit)

Operating Instructions

1. Add water and paraffin wax and connect to a suitable supply as described in the installation section of this manual. Switch on the unit using the ‘mains switch’ which will then be illuminated.

2. The “HEAT” LED on the digital display should illuminate, indicating that the water is now heating.

3. The water will continue to heat until a temperature of between 55 and 60°C is displayed at which point the “HEAT” LED will turn off and on as required to maintain the water temperature.

The wax may take several hours to melt fully – this is normal.

4. Wait for the temperature of the wax to stabilise just above its melting point (approximately 50°C). The temperature (of the wax) should be checked using the thermometer. Typical wax temp will be 55°C – do not apply treatment if the wax temp exceeds 60°C.

5. Inspect the area to be treated for contraindications. Wash and dry the area to be treated.

6. Immerse the part of the body to be treated in the wax for 2 or 3 seconds, and then withdraw it. A thin layer of solid wax will be formed. Repeat this procedure 5 to 10 times to produce a layer of wax about 3mm in thickness over the part of the body being treated.

7. Leave the coating of wax in place for 15 to 20 minutes. The wax may then be peeled off.

8. For areas of the body which cannot be immersed in the wax tank, molten wax may be carefully and slowly poured or ladled on to the area to be treated, making sure that wax that runs off the area can be collected in a suitable container.

9. After several treatments, dirt and other undesirable impurities may collect at the bottom of the wax tank. When this reaches an unacceptable level, the wax should be removed and exchanged or purified using a wax purifier.

10. **Daily** check the water level in the wax bath.

11. **Always** check the wax temperature before use.

Wax Bath Water Temperature Control Operation

First ensure that the mains plug is connected, the 'mains switch' is turned 'on' and illuminated. The 'Temperature Controller should light up but in the event that the display of the controller does not turn on, press and hold the power button for 3 seconds until the display lights up. The digital temperature control was set at the factory for nominal operation but depending on environmental parameters (such as room temperature and how long the wax bath has been left switched on or off) the user may need to adjust the working temperature control slightly for ideal performance in their installation. If this is the case, you can adjust the working temperature of the water to a different value. This value is stored in the memory F1. **Do not change another F memory or the Wax Bath may stop working as expected.**

To change the temperature, follow these steps: -

1.- Press and hold the "S" key for three seconds until the bank memory F1 appears.
(If for any reason, you are in a different F number, exit pressing the power key once and start the process again)

2.- Press the "S" key once until the set temperature screen appears (60°C is the factory setting)

3.- Press AND HOLD only the "S" KEY and with the "S" key still pressed, use the up or down arrow key to select the new temperature value you want. **NB:** The optimal working temperature is between 53°C and 68°C – the unit has a thermal cut-out if the temperature is too high – see p16.

4.- Press the power key once to save the new value. It will return to the operating screen showing the temperature of the water

Factory settings

Memory Bank	Value	Description
***F1**	**60°C**	Water target temperature
F2	0.5°C	Hysteresis
F3	10min	Compressor

***F1 is the only value that can be modified between 53°C and 68°C by the customer**

Maintenance

Each day check the water level is correct. The water level should be just above the inlet hole when viewed through the water-filler cover.
If the water level becomes too low the safety thermostat will operate and cut off the mains supply to the heating element. The red warning lamp will light. Refill with water to the correct level and pull the reset cord at the bottom of the unit (figure 1, p10). This will reset the safety thermostat and the red warning light will go out.

The mains circuit breakers are located adjacent to the mains cable entry at the front right of the unit. Should the mains switch not be illuminated when in the on position, check to see if either of the circuit breakers has tripped. To reset the circuit breakers push them in firmly. If resetting the circuit breakers does not correct the fault, examine the fuse in the mains plug (if fitted). If neither replacing the fuse in the mains plug nor resetting the mains circuit breakers rectifies the fault then qualified service personnel should be contacted.

Cleaning and Emptying

The outer surfaces of the Varitherm wax bath may be cleaned with a simple detergent cleaner or hot water and a soft cloth.

From time to time the wax may become unacceptably contaminated with foreign matter and may be removed (whilst in liquid state) using a suitable container (glass jug). When most of the wax has been removed the residue may be removed using a soft cloth.

If it is necessary to re-locate the wax bath or prepare for servicing the water should be removed from the copper water tank.

Ensure the device is switched off and unplugged from the mains supply.

Remove the wax tank (see page 16) and remove water using suitable glass jug. The final drops can be removed by gently tipping the bath on to one end and pouring into a suitable container.

Circuit Description -

The mains supply is applied to the unit through 15A circuit breakers in both live and neutral connections. The mains on/off switch has an integral green lamp to show when the power is on.

The heating element is rated at 3kW and carries a safety cut-out thermostat in a tube close to the element. The safety thermostat is set to open at 75°C. The red warning lamp is wired across the safety thermostat so that it will be illuminated should it open. The safety thermostat has a manual reset which can only be activated when the temperature has fallen below 60°C and is accessed by the pull-cord at the front of the unit.

The temperature is controlled by an electronic temperature sensor and digital controller which switches the heating element on and off and so controls the temperature of the water (and therefore also the wax) in normal use. The user can set the target temperature in the controller's memory F1 – see instructions on Page 14 above.

Disassembly and Assembly

Replacing the Wax Tank (24-50A)

1. Remove the two grub screws securing the wooden surround.
2. Remove the wooden surround (24-50B).
3. Remove the wax tank (24-50A).
4. Inspect the rubber seal (15-45) around the edge of the copper tank and replace if damaged or perished.
5. Insert the new tank, replace the wooden surround and secure with the two screws.

Appendix A - EMC test levels.

Test standard	Description	Class/Group/Immunity test level
CISPR11:2009+A1:2010	Radiated emissions	Class A Group 1
CISPR11:2009+A1:2010	Conducted emissions	Class A Group 1
IEC/EN 61000-4-2	Immunity from electrostatic discharge	±15kV air, ±8kV contact
IEC/EN 61000-4-3	Radiated RF immunity	3V/m
IEC/EN 61000-4-3	Radiated immunity from intentional transmitters	28V/m maximum
IEC/EN 61000-4-4	Immunity from electrical fast transients and bursts	±2kV AC supply line, ±1kV signal lines
IEC/EN 61000-4-5	Surge immunity on AC supply	±2kV common mode, ±1kV differential mode
IEC/EN 61000-4-6	Conducted RF immunity	3V rms 150kHz > 80MHz, 6V rms ISM and amateur bands
IEC/EN 61000-4-11	Immunity to voltage dips, short interruptions and voltage variations	10ms > 5s dip/interruption time

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