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ISOLATED ORGAN BATHS

Cat. No. 4000 / 4050 / 4400

INSTRUCTION MANUAL

UGO BASILE
BIOLOGICAL RESEARCH APPARATUS
Via G. Borghi 43
21025 COMERIO - Varese, ITALY

INSTRUCTION MANUAL

ISOLATED ORGAN BATHS

Cat. No. 4000 / 4050 / 4400

Series No. _____ **Mfg. date** _____

THIS INSTRUMENT IS WIRED FOR

- ☐ 115 Volts – 60 Hz
- ☐ 115 Volts – 50 Hz
- ☐ 230 Volts – 50 Hz
- ☐ 230 Volts – 60 Hz

OPERATION

SAFETY CONSIDERATION

ALTHOUGH THIS INSTRUMENT HAS BEEN DESIGNED WITH INTERNATIONAL SAFETY STANDARD, THIS MANUAL CONTAINS INFORMATION, CAUTIONS AND WARNINGS WHICH MUST BE FOLLOWED TO ENSURE SAFE OPERATION AND TO RETAIN THE INSTRUMENT IN SAFE CONDITIONS.

SERVICE AND ADJUSTMENTS SHOULD BE CARRIED OUT BY QUALIFIED PERSONNEL, AUTHORIZED BY UGO BASILE ORGANIZATION.

ANY ADJUSTMENT, MAINTENANCE AND REPAIR OF THE OPENED INSTRUMENT UNDER VOLTAGE SHOULD BE AVOIDED AS MUCH AS POSSIBLE AND, WHEN INEVITABLE, SHOULD BE CARRIED OUT BY A SKILLED PERSON WHO IS AWARE OF THE HAZARD INVOLVED.

CAPACITORS INSIDE THE INSTRUMENT MAY STILL BE CHARGED EVEN IF THE INSTRUMENT HAS BEEN DISCONNECTED FROM ITS SOURCE OF SUPPLY.

Instruction Manual dated March 2005
Revision 2

CE

ISOLATED ORGAN BATHS

Cat. 4000 One Muscle Chamber

Cat. 4050 Two Muscle Chambers

Cat. 4400 Four Muscle Chambers

FOR ACCURATE RECORDING OF ISOMETRIC OR ISOTONIC TISSUE CONTRACTION/RELEASE

FEATURES

- All components visible through the clear Pespex tank
- Easy and quick attachment of tissue.
- Diffusion between chambers and temperature equilibrating coils prevented by syringe valves.
- Precision water temperature control.
- Tissue washing without exposure to air.
- Water-jet bath stirring provided by a noiseless vibration-free centrifugal pump.

Safety
Efficiency
Convenience

UGO BASILE S.R.L. BIOLOGICAL RESEARCH APPARATUS	**CHECK-LIST** **4000 – 4050 – 4400 ISOLATED ORGAN BATH**

CLIENTE / CUSTOMER_____

No. Ordine / Order No. _____ Data / Date____/_____/_____

☐ **CAT. 4000 ISOLATED ORGAN BATH – 1 CHAMBER**

UB code	*CAT.No.*	*√*	*Q.ty*	*DESCRIPTION*		*√*	*DESCRIZIONE*	
			1	INSTRUCTION MANUAL			MANUALE ISTRUZIONE	
E-WP 008			1	MAINS CABLE	EUROPE		CAVO RETE	EUROPA
E-WP 008-1					U.S.A.			U.S.A.
E-FT 014			2	FUSES FOR 115V (T2.5 A)			FUSIBILI PER 115 V (T2.5 A)	
E-FT 010-1			2	FUSES FOR 230 V (T1.25 A)			FUSIBILI PER 230 V (T1.25 A)	
see table / vedi tabella (*)			1	MUSCLE CHAMBER			CUVETTE	
	4005		1	TEMP. EQUAL. COIL			SERPENTINA	
	14110		1	RACK-WORK BOSS-HEAD			MORSETTO A CREMAGLIERA	
Verificare che cambio tensione e fusibili inseriti nel blocco alimentazione corrispondano ai dati di targa								

☐ **CAT. 4050 ISOLATED ORGAN BATH – 2 CHAMBERS**

UB code	*CAT.No.*	*√*	*Q.ty*	*DESCRIPTION*		*√*	*DESCRIZIONE*	
			1	INSTRUCTION MANUAL			MANUALE ISTRUZIONE	
E-WP 008			1	MAINS CABLE	EUROPE		CAVO RETE	EUROPA
E-WP 008-1					U.S.A.			U.S.A.
E-FT 014			2	FUSES FOR 115V (T2.5 A)			FUSIBILI PER 115 V (T2.5 A)	
E-FT 010-1			2	FUSES FOR 230 V (T1.25 A)			FUSIBILI PER 230 V (T1.25 A)	
see table / vedi tabella (*)			2	MUSCLE CHAMBER			CUVETTE	
	4005		1	TEMP. EQUAL. COIL			SERPENTINA	
	14110		2	RACK-WORK BOSS-HEAD			MORSETTO A CREMAGLIERA	
Verificare che cambio tensione e fusibili inseriti nel blocco alimentazione corrispondano ai dati di targa								

☐ CAT. 4400 ISOLATED ORGAN BATH – 4 CHAMBERS

UB code	*CAT.No.*	*√*	*Q.ty*	*DESCRIPTION*		*√*	*DESCRIZIONE*	
			1	INSTRUCTION MANUAL			MANUALE ISTRUZIONE	
E-WP 008			1	MAINS CABLE	EUROPE		CAVO RETE	EUROPA
E-WP 008-1					U.S.A.			U.S.A.
E-FT 014			2	FUSES FOR 230 V (2.5 A)			FUSIBILI PER 230 V (T2.5 A)	
E-FT 016			2	FUSES FOR 115 V (T5 A)			FUSIBILI PER 115 V (T5 A)	
see table / vedi tabella (*)			4	MUSCLE CHAMBER			CUVETTE	
	4005		4	TEMP. EQUAL. COIL			SERPENTINA	
	4404		1	ROD SUPPORT			ASTA DI SOSTEGNO	
	14110		4	RACK-WORK BOSS-HEAD			MORSETTO A CREMAGLIERA	

Verificare che cambio tensione e fusibili inseriti nel blocco alimentazione corrispondano ai dati di targa

(*) MUSCLE CHAMBER TYPE						
	4020			20ml, with aeration arm + hook		20ml, con braccio laterale + gancio
	4030			30ml, with aeration arm + hook		30ml, con braccio laterale + gancio
	4040			50ml, with aeration arm + hook		50ml, con braccio laterale + gancio
	4105			5ml, with frit + hook		5ml, con fratta porosa + gancio
	4100			10ml, with frit + hook (standard)		10ml, con fratta + gancio
	4200			20ml, with frit + hook		20ml, con fratta + gancio
	4300			30ml, with frit + hook		30ml, con fratta + gancio
	4500			50ml, with frit + hook		50ml, con fratta + gancio
	4115			5ml, with frit, no hook		5ml, con fratta, senza gancio
	4101			10ml, with frit, no hook		10ml, con fratta, senza gancio
	4201			20ml, with frit, no hook		20ml, con fratta, senza gancio
	4301			30ml, with frit, no hook		30ml, con fratta, senza gancio
	4501			50ml, with frit, no hook		50ml, con fratta, senza gancio

DATE / /	Serial No.	PREPARATO DA / PACKED BY

Set for

☐ 115V 50 Hz ☐ 230V 50 Hz ☐ 115V 60 Hz ☐ 230V 60 Hz

IMPORTANT/IMPORTANTE:

Check the shipment for completeness immediately after receipt: should you find any discrepancy, please fill in the following part and transmit it to our fax No. +39 0332 745488

Al ricevimento della merce controllate che la spedizione sia completa: in caso di discrepanza, completate il formulario di seguito riportato ed inviatelo al nostro fax No. 0332 745488

FROM: Name	Company/Institution
DATE	REF.

NOTES

CONTENTS

FIGURE INDEX

ISOLATED ORGAN BATHS

Cat. 4000 / 4050 / 4400

1 GENERAL

The **BASILE Isolated Organ Baths** have been designed for accurate recording of tissue tension or contraction/release displacement.

Research involving effects of electrical stimuli or drugs on isolated organs, uterus, trachea, vessel strips, auricle, can be performed under optimum conditions.

The tank is made of optical-grade, stress released, Perspex sheets bonded together by ICI cement. All models are provided with an overflow outlet that can be branched to a sink.

1.1 Basic Features

a) All components visible through clear Perspex tank

b) Easy and quick attachment of tissue

c) Precision water temperature control

d) Tissue washing without exposure to air via an upper overflow outlet

e) Water-jet bath stirring provided by a noiseless vibration-free centrifugal pump

2 INSTRUMENT DESCRIPTION

2.1 4000 One-Chamber Bath

The 4000 single chamber water bath consist of a clear Perspex tank, 19x19x17cm, which contains:

- one **tissue chamber** Cat. **4100**
- one temperature-equilibrating **coil** Cat. **4005**
- one adjustable **support rod** Cat. **4004** on which transducers (Isometric Cat. 7003, 7004, 7005, 7010 or isotonic Cat. 7006) can be assembled to via the
- lead-screw **positioner** Cat. **14110** provided.

see also paragraph 6-ORDERING INFORMATION.

The wash or test solution enters the chamber after passing though the temperature equilibrating coil and a syringe valve.

The tissue is washed by flushing the chamber through an overflow outlet to avoid exposing it to the air.

The tank water stirring is accomplished by a water jet delivered by a centrifugal pump located in the control box attached to the tank.

A 250 W stainless steel heating element is mounted on the Perspex tank floor.

The desired temperature is maintained with a uniformity of +/- 1%.

A draining tap is provided on the front of the bath base.

2.2 4050 Dual-Chamber Bath

This is similar to the one single chamber bath but the tank is dimensioned 34x19x17 cm, to accommodate:

- two tissue chambers Cat. 4100
- two temperature-equilibrating coils Cat. 4005
- two adjustable support rods Cat. 4004 on which transducers (Isometric Cat. 7003, 7004, 7005, 7010 or isotonic Cat. 7006) can be assembled via the
- two lead-screw positioners Cat. 14110 provided.

2.3 4400 Four-Chamber Bath

The 4400 bath lodges up to 4 preparations. It maintains the features of both 4000 & 4050 models, but the hating power and tank dimensions, 47x29x22 cm, are upgraded accordingly.

4400 standard package includes:-

- four tissue chambers Cat. 4100
- four temperature-equilibrating coils Cat. 4005
- four adjustable support rods Cat. 4004 on which transducers (Isometric Cat. 7003, 7004, 7005, 7010 or isotonic Cat. 7006) can be assembled via the
- four lead-screw positioners Cat. 14110 provided.

2.4 Tissue Chamber

The standard tissue chamber is provided with porous frit, which allows the introduction of oxygen and adequate oxygenation to take place while preventing excessive agitation of

tissue. The chambers with porous frit are available in 5, 10, 20, 30, 50 ml volume; if not otherwise requested, the baths are supplied with the 10ml size chamber/s.

An accurately positioned glass hook is provided in the chamber to which the thread loop can be easily attached, ensuring the organ being well centred in the chamber.

Muscle chambers provided with an aeration side arm, available in 20, 30 or 50 ml volume, with or without hook are available on request (see 4.0 ORDERING INFORMATION).

Please refer to paragraph 6-ORDERING INFORMATION for catalogue numbers.

Customised chambers, i.e., with non standard shape and /or volume can be prepared on request.

The chambers fit to Perspex “plinths” fastened to the tank bottom via taper joints.

The overflow outlet ensures the absolute volume after overflow washing has taken place. The washing fluid is drained to the outside of the water tank.

Medical grade Tygon tubing is used for oxygen & test solution connections.

2.5 Electrodes

Our manufacturing program includes customized electrodes for mural and intramural, as well as field protocols, our Field Stimulation Electrodes Cat. 3160 and 3161, see paragraph 6-ORDERING INFORMATION.

2.6 Control Box

The control section of the bath lodges the electronics, consolidated on a single circuit board. Its upper panel consolidates all commands, see Figure 3 “Front Panel”.

The temperature regulator (see paragraph 2.6.1), the temperature sensor (paragraph 0), and the circulation motor (paragraph 2.6.4) are connected to the printed circuit board by connectors which enable quick disconnection for servicing purposes, see paragraph 5.1.1.

2.6.1 Temperature Regulator

The temperature regulators mounted on the baths of our make are sturdy, compact, reliable.

The temperature regulator located on the upper panel of the control section is provided with keys to preset water temperature in the range 25-45°C, enabling an accurate temperature setting in 0.1°C steps.

Figure 1 “Thermoregulator Control Panel” describes the function of each keys.

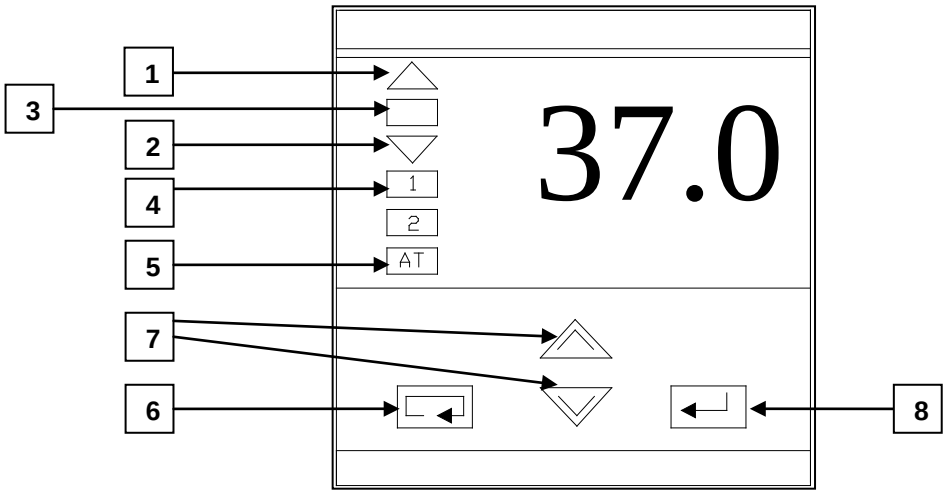


Figure 1 "Thermoregulator Control Panel"

1 & **2** red LED = deviation indicator

3 green LED = temperature monitor, see paragraph 4.1.1-Temperature Control

4 red LED = heater monitor

5 green LED = TUNE running

6 = MENU access

7 up & down arrows = value modification

8 = ENTER key for selection & confirmation of value setting

Refer also to the attached Thermoregulator instruction manual for a more detailed description.

However, when operating our Baths, **we recommend to attain strictly to what outlined in paragraph 4-OPERATION for the function of each key**.

In fact the thermoregulator is factory preset to ensure a simple and trouble-free operation of the bath: when accidentally depressed, some keys, in particular keys 6 & 8, may lead to a modification of the preset values and hence to incorrect functioning of the bath.

2.6.2 Temperature Sensor

The wire-wound temperature probe is embodied in a stainless steel flanged tube, fastened to the tank side wall, contiguous to the control section.

An O-ring seal ensures water tightness.

2.6.3 Heater

This is a 250W stainless-steel element, fastened to the tank bottom.

Steel thickness of 1 mm has been selected, which is adequate to ensure long life even in slightly corrosive water solutions and to maintain the thermal mass (= specific heat x mass)

small enough so as to contain temperature hunting within the excellent limits of ±0.1°C.

Special silicone-rubber O-rings maintain water tightness and withstand countless hot/cold and wet/dry cycles without any impairment.

2.6.4 Circulation Motor/Pump

Circulation Motor/Pump is a reliable, silent, vibration free unit which consists basically of a centrifugal pump/a.c. brushless motor combination. The pump impeller and motor rotor form an integral unit which works immersed in water.

The pump casing and motor stator fit like two shell halves around the impeller/rotor unit. A twist lock/O-ring combination assures perfect water tightness and makes disassembling very easy.

Stator frame and winding are embodied in epoxy compound which ensures mechanical stability and excellent insulation.

The whole is free from the customary problems occurring in conventional shaft motor/pump coupling, i.e., gland seal leakage or shaft jamming, particularly when the pump is restarted after long inactivity.

The casing inlet, clearly visible in the picture, fits to a tank wall connection via a plastic joint.

3 INSTALLATION

3.1 Unpacking & Preliminary Check

Check the contents of the shipment for completeness, packing list to hand, and visually inspect the instrument as soon you take it out of the packaging. Use the ***Check List*** supplied.

Take out the packaging material with due care: you are handling glass!

Protect the environment!

Dispose of packaging properly, according to existing and applicable waste management rules and regulations.

3.2 Notes on the Instruction Manual

The Instruction Manual for all models is included in the package; it is necessary for the correct installation and operation of the instrument.

We recommend keeping the manual in good conditions, ready to be consulted by the qualified personnel who use the instrument.

Free of charge copies of the instruction manual are available upon request: please contact our service department (see paragraph 5.4-Customer Support) specifying the series number of your instrument.

3.3 Assembling the Instrument

Assemble the bath on a stable bench or table surface. Check tube and sleeve connections and insert the muscle chamber/s on their plinth/s.

Fill the tank, ideally using distilled water, as this will completely avoid calcium deposits on the tank walls and heating element.

The use of tap water will however not cause any serious inconvenient except a slight impairment of Perspex transparency and some calcium deposits on the heating element which may in the long run require a minimum of maintenance to remove them, see paragraph 5.2.1-Cleaning.

3.4 Before Applying Power

Take a look at the Power Module, on the back wall of the control box, which encompasses the inlet connector of the mains cord, the mains switch and the fuse holder/voltage selector.

3.4.1 Mains Switch

This two-pole toggle switch, which complies with international safety standards, provides a visual cue, meaning:-

- **OFF** when pressed to the "**O**" side
- **ON** when pressed to the "**I**" side

3.4.2 Fuse Holder & Voltage Selector

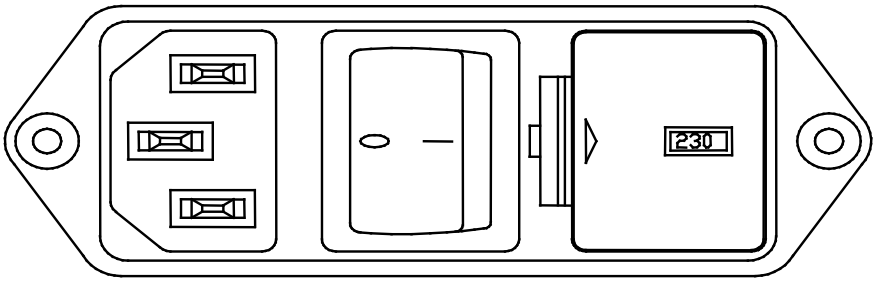


Figure 2 "Power Module"

The fuse holder comprises two fuses, one on the live, and the other on the neutral. For operation at 220-230 Volts, we recommend 1.25 A timed fuses (type T1.25A). Use 2.5 A

fuses (type T2.5 A) for operation at 115 Volts. To replace the fuses, see paragraph 5.1-Electrical.

The fuse holder also embodies the Voltage Selector. Make sure that the flag indicates the correct voltage (i.e., the voltage of your mains).

Changing the selected voltage, from 230 to 115 or viceversa, ideally requires the ventilator to be returned to our factory, see paragraph 5.1-Electrical.

3.4.3 Mains Cord

It is a standard cable, Cat. # E-WP008. Make sure your power outtake is provided with a reliable ground connection, see also 3.5 & 3.6.

3.5 Connections

Connect the mains cord to a power outtake, ***provided with a reliable earth connection***.

3.6 Additional Safety Consideration

UGO BASILE DOES NOT ACCEPT ANY RESPONSIBILITY FOR PROBLEMS OR HARM CAUSED TO THINGS OR PERSONS ARISING FROM:

- INCORRECT ELECTRICAL SUPPLY;
- INCORRECT INSTALLATION PROCEDURE;
- INCORRECT OR IMPROPER USE OR, IN ANY CASE, NOT IN ACCORDANCE WITH THE PURPOSE FOR WHICH THE INSTRUMENT HAS BEEN DESIGNED AND THE WARNINGS STATED IN THE INSTRUCTION MANUAL SUPPLIED WITH THE INSTRUMENT;
- REPLACEMENT OF ORIGINAL COMPONENTS, ACCESSORIES OR PARTS WITH OTHERS NOT APPROVED BY THE MANUFACTURER;
- SERVICING CARRIED OUT BY UNAUTHORIZED PERSONNEL.

a. Place your Bath on a steady table surface.

b. Do not obstruct free and comfortable access to the power module.

c. Use original accessories and spare parts only, see also paragraph 6-ORDERING INFORMATION.

d. Immediately disconnect and replace an accidentally damaged mains cord.

e. Do not operate the Bath in hazardous environments or outside prescribed environmental limitations (i.e. 10°C / +40°C, 95% relative humidity, non-condensing), see also paragraph 6.5-Specifications.

4 OPERATION

4.1 Switching On

Switch on the Organ Bath by acting on the Mains Switch placed on the back wall of the instrument; see paragraph 3.4.1-Mains Switch. The red LED located on the front panel (see Figure 3 “Front Panel”) lights, denoting that the instrument is on.

Figure 3 “Front Panel”

The temperature regulator located on the upper panel of the control section is provided with keys to preset the **temperature** in the range **25-45°C, in 0.1°C steps**.

The bath is factory set at 37° and each time it is switched on, it will present the last set temperature.

Operate the circulator switch which activates water circulation; no power is delivered to the heater if the circulator switch is OFF (toggle switch on centre position).

Switch the heater on:

POSITION 1 (**Full Power**) provides full power and is recommended in the case it is

necessary to attain the set temperature in short time: 30 minutes, starting at room temperature for bath 4000.

POSITION ½ **(half power)** supplies half the power and is adequate for maintaining the water tank at desired temperature, to attain max. set temperature precision and, last but not least, to save power.

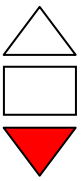
4.1.1 Temperature Control

When the Bath is switched on, the display shows the actual water temperature. When depressing the up or down arrows (**7**) once, the display shows the preset temperature, see paragraph 2.6.1 and Figure 1 “Thermoregulator Control Panel”.

Set the desired temperature, within the range 25-45°C, depressing once again the up or down arrow keys.

To start the temperature heating, enter the TUNE menu by depressing the MENU access key (**6**) twice. Now depress the up arrow key (**7**) twice, until the display shows **STRT** (start), then the ENTER key (**8**); the green LED (**5**) lights.

The two LEDS **1** & **2** monitor the temperature deviation, higher or, respectively, lower compared to the preset one, according to the following scheme.

 Green LED on	 Green LED on + 1 red LED on	 Only red LED on
±1% (keeping the preset temperature)	**±2%** <u>See note below</u> (temperature deviation, lower or higher than preset value, according to the LED which is alight)	**>2%** (temperature deviation, lower or higher than preset value, according to the LED which is alight)

N O T E : when switching on the bath, if temperature deviation is higher than 2% (one of the red LEDs on) position the POWER switch to position 1 (full power).

As soon the water temperature reaches a ±2% deviation from the preset one (green LED **3** & one red LED on), switch to position 2 (half power).

The red LED with the caption “1” (**4)** monitors the heater: when lighted, it means the heater is activated.

IMPORTANT:

The LED indicated as **5** monitors the “TUNE” menu. Access to the menu is enabled by keys **6** and **8.** Please enter the TUNE menu only when starting the temperature heating, see third paragraph in this subheading.

<u>We recommend to avoid entering this menu if not for the reason mentioned above, hence to avoid depressing keys 6 & 8,</u> which may lead to a

modification of the preset values and hence to incorrect functioning of the bath.

4.2 Test

Insert the preparation in the chamber, connect the transducer, etc. when the bath is thermally stabilized at the preset temperature.

Fill the chamber by pulling up the valve plunger. Purge the temperature equalizing coil from air bubble, check the valve operation by filling & draining the chamber a couple of times.

5 MAINTENANCE & SERVICING

While any service of the instrument is to be carried out by Ugo Basile personnel or by qualified personnel, authorized by UGO BASILE organization, this section of the instruction manuals describes normal maintenance procedures which can be carried out at the customer's facilities.

UNPLUG THE MAINS CORD BEFORE CARRYING OUT ANY MAINTENANCE JOB!

5.1 Electrical

To inspect and/or replace the fuses, **disconnect the mains cable first!** Insert a miniature screwdriver in the slot indentation, see paragraph 3.4.2-Fuse Holder & Voltage Selector, and snap out the slide which houses the fuses.

For operation at 220-230 Volts, we recommend 1.25 A timed fuses (type T1.25A). Use 2.5 A fuses (type T2.5 A) for operation at 115 Volts.

Make sure that only fuses with the required rated current and of the specified type are used for replacement. The use of repaired fuses and short circuiting of the fuse holder must be avoided.

Snap in the fuse slide: the "*click*" ensures that it is locked. Check the voltage flag before applying electrical power.

Shifting from 230 to 115 or viceversa requires the replacement of the water circulator and some change in bridging configuration on the PCB.

Ideally, this job should be carried out at our factory; please get in touch with our service department for returning the ventilator, see paragraph 5.4-Customer Support, or ask for directions in case you desire to carry out the job yourself.

5.1.1 Electronics

All the electronics (see WIRING DIAGRAMS) is consolidated on a single circuit board on which the LED indicators D1, D2, D3, D4 and the splash proof switches S1, S2, S3 are mounted.

The temperature regulator (TR), the temperature sensor (TS), the heater (H) and the circulation motor (CM) are connected to the P.C.B. by connectors CO1, CO2, CO3, CO4 and CO5, which enable quick disconnection for servicing purposes.

TR is provided with an OCTAL electron type socket connector.

The 230V-250W heater is centre tapped to provide 115 or 230V operation according to bridging configuration of posts 1, 2, 3, 4, 5 (115V: 4-3 & 2-1 bridged; 5-4 & 2-3 open. 240V: 4-5 & 2-3 bridged; 4-3 & 2-1 open.

R5-R2 and R3-R4 provide voltage drop and current limit, to light D4 or D3 according to S3 position (OFF/FULL POWER/HALF POWER).

S3 sets 230 full power by routing current through the heater elements in series, whilst in the 110V configuration these elements work in parallel.

In the 230V half power mode D5 is inserted in the current path; in the 115V half power mode one heater element only is energized.

5.1.2 Heater, Electronics, Temperature Control System

In the case of malfunction, simple reasoning on the four configurations displayed in Fig. 1 and the use of a conventional “tester” will help to detect the faulty element. For example, an “open” D5 will not impair 240V full power but will cause the half power to be totally “dead”, i.e., no LED indicator and no heat.

The P.C.B. can be taken out after having detached the side Perspex panel and removed the “dress nuts” which fasten the switches to the upper panel. TS, H, CM can be isolated by detaching the appropriate connectors (see 5.1.1-Electronics).

When replacing TS and H, check that the seals are correctly positioned to ensure water tightness.

A Pt wire-wound temperature sensor TS, connected to TR by pins 4 & 5 earthed, operates a relay R via a solid state bridge/amplifier circuit. T contacts connect pin 1 to 2, thus energizing H via TR pins 8-1 & 2, S3, S2 (1-2), S1 (4-5).

5.1.3 Circulation Motor

Circulation motor can be detached by holding firmly the stator casing and rotating it clockwise (see 1.7.4). The pump impeller comes out by exerting a gentle pull.

Visual inspection is sufficient in most cases to ascertain the cause of malfunction.

5.2 Mechanical

Syringe plungers are easy to be replaced by removing the Nylon set screw which limits the piston travel. The switch valve seat is supposed to last for the whole operational life of the Bath.

In case of accidental breakages of Perspex parts, due to a fall or knock, keep in mind that all parts can be perfectly glued together by a suitable Perspex cement available on the market.

Broken rims should be kept together in place at moderate pressure that can be obtained by small weights or stretches of adhesive tape, left on place for at least two hours.

Glassware is only subject to the customary breakages due to accidental knocks or fall when handling it; once in place, there is nothing which stresses it to the point of risking a breakage.

To replace the Tygon connection tubes, exert due caution: an accidental glass breaking while forcing a tube end to a chamber and/or coil, may cause an awful laceration.

THE USE OF HEAVY DUTY GLOVES IS RECOMMENDED.

A strong side knocks to a muscle chamber may break the Perspex plinth (see 1.6) which supplies the test solution to the chamber via a taper joint.

The plinth can be taken out by removing 3 fastening screws.

When replacing it, check that the O-ring seals which assures water tightness is correctly positioned.

5.2.1 Cleaning

Water tank does not require particular attention: a dilute acetic acid solution can be used to remove calcium deposits, in case tap water has been used for extended periods, in lieu of the recommended distilled water.

5.3 Long Inactivity

The instrument does not require any particular maintenance after long inactivity, except cleaning, see paragraph 5.2.1.

5.4 Customer Support

For any further information you may desire concerning the operation and/or maintenance of the Isolated Organ Bath, please do not hesitate to get in touch with our local distributor

or with our **service department** at:-

UGO BASILE S.r.l.
Via Guido Borghi 43
21025 COMERIO – Varese, ITALY
Phone : +39 0332 744574
Fax : +39 0332 745488
e-mail : service@ugobasile.com

Before sending any instrument to our factory for repair, we recommend you to get in touch with our service department (mentioning the serial number of your instrument) to obtain a return authorization number (R.A.N.) and shipping instructions.

We may not be held responsible for damages during transport due to poor packing. Whenever possible, please use the original packing.

6 ORDERING INFORMATION

4000 ISOLATED ORGAN BATH, one muscle chamber, see paragraph 2.1
4050 ISOLATED ORGAN BATH, two muscle chambers, see paragraph 2.2
4400 ISOLATED ORGAN BATH, four muscle chambers, see paragraph 2.3

6.1 Standard Glassware

4005 Temperature Equilibrating Glass Coil *
4100 Chamber with porous frit and hook, 10 ml *

An **asterisk (*)** indicates the **Standard accessories**, supplied with the instrument.

Quantity of glass coils, muscle chambers, support rods and positioners according to model (one each for 4000, two each for 4050, four each for 4400, see also paragraph 2-INSTRUMENT DESCRIPTION).

6.2 Other Available Glassware

4020 Chamber with side aeration arm and hook, 20ml
4030 Chamber with side aeration arm and hook, 30ml
4040 Chamber with side aeration arm and hook, 50ml
4105 Chamber with porous frit and hook, 5 ml
4200 Chamber with porous frit and hook, 20 ml
4300 Chamber with porous frit and hook, 30 ml

4500	Chamber with porous frit and hook, 50 ml
4115	Chamber with porous frit, no hook, 5 ml
4101	Chamber with porous frit, no hook, 10 ml
4201	Chamber with porous frit, no hook, 20 ml
4301	Chamber with porous frit, no hook, 30 ml
4501	Chamber with porous frit, no hook, 50 ml

Non-standard **customized muscle chambers** can be manufactured on request. Size, shape and fixtures according to data supplied by the customer. Do not hesitate to submit your requirements!

6.3 Spares & Accessories

4001	Tygon Tube, I.D. 5mm, O.D. 8mm, 1 metre	*
4002	Tygon Tube, I.D. 6mm, O.D. 9mm, 1 metre	*
4006	Heater	*
4007	Circulation Pump	*
4008	Circulation Pump Impeller	*
4009	Temperature Regulator	*
4015	Dust Cover for 4000	*
4016	Dust Cover for 4050	*
4017	Circulation Pump (115V)	*
4019	Temperature Probe	*
E-WP008	Power Cord – Europe (or *E-WP008-1* U.S.A. / *E-WP008-2* U.K.)	*
***** Set of 2 fuses for either 115 VAC or 230 VAC mains		*

6.4 Boss-Heads & Uprights

14110	Lead-Screw Positioner for 10 and 13mm rods	*
4004	Wall Support Rod	*
4210	Three Claw Stand, with 10mm diam. upright - optional	
4213	Three Claw Stand, with 13mm diam. upright- optional	

Our production line also includes an ample selection of **Transducers, Digital and Chart Recorders, single or multi-channel. Ask for the detailed leaflets!**

6.5 Specifications

Temperature	:	25-45°C in 0.1°C steps
Temperature Setting	:	via arrow keys
Temperature Precision	:	+/- 0.1°C
Power Requirements	:	115 or 230 V, 50/60 Hz, 250 Watt max. (4000 / 4050) 560 Watt max. (4400)

Sound Level		:	< 70 dB
Weight (net)	4000	:	Kg 3.75
	4050	:	Kg 6.25
	4400	:	Kg 8.50
Shipping Weight	4000	:	Kg 7.00
	4050	:	Kg 11.50
	4400	:	Kg 16.50
Dimensions	4000	:	32 (w) x 20 (d) x 22 (h) cm
	4050	:	47 (w) x 20 (d) x 22 (h) cm
	4400	:	47 (w) x 29 (d) x 22 (h) cm
Packing dimensions	4000	:	67 x 42 x 53 cm
	4050/4400	:	66 x 50 x 63 cm

WIRING DIAGRAMS

4000-000ES01	Wiring Diagram
4000-000EL01	Electronic List
4000-000EC01	Board Component Layout
4000-000EW01	Cables & Connectors
4000-000EX01	Electronic List – *External Components*
4400-400ES01	Wiring Diagram
4400-400EL01	Electronic List
4400-400EC01	Board Component Layout
4400-400EX01	Electronic List – *External Components*

WIRING DIAGRAMS ARE NOT INCLUDED IN THE MANUAL, BUT ARE **AVAILABLE ON REQUEST.**

PLEASE ADDRESS TO OUR AFTER SALES SERVICE, SEE ALSO PARAGRAPH 5.4- Customer Support

Notes

Notes

Notes

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UGO BASILE S.r.l. BIOLOGICAL RESEARCH APPARATUS Comerio – VA - ITALY	**DICHIARAZIONE CE DI CONFORMITA'** **CE CONFORMITY STATEMENT**

Produttore *Manufcturer*	**UGO BASILE S.R.L.** Società / company Via G. Borghi, 43 – 21025 Comerio, VA, ITALY Indirizzo / address +39 0332 744574 - +39 0332 745488 Telefono / *phone* fax

SI DICHIARA CHE / *WE HEREBY STATE THAT*

Apparecchiatura *Instrument*	ISOLATED ORGAN BATHS Cat. No. 4000/4050 Cat. No. 4400/4450

- **È costruita in conformità alle DIRETTIVE DEL CONSIGLIO DELLE COMUNITÀ EUROPEE concernente il ravvicinamento delle legislazioni degli Stati Membri relative alla Bassa Tensione (73/23/CEE) e alla Compatibilità Elettromagnetica (89/336/CEE). *Is manufactured in conformity with the provisions of the EUROPEAN COMMUNITY COUNCIL directives for Low Voltage (73/23/CEE) and Electromagnetic Compatibility (89/336/CEE).***

- **È costruita in conformità alle seguenti norme e specificazioni tecniche armonizzate / *Conform the following directives and harmonized technical specifications:* EN 292, EN 1050, EN 60204-1, EN 61010-1, EN 61000-3-2, EN 61000-3-3, 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4.**

Direttore Generale / *Director*	Ugo Basile
Responsabile del Prodotto / *Product Manager*	Nome / *Name*
Gennaio 2003	Ug. Basile
Data / *Date*	Firma / *Signature*