Stirring Water Bath

Instruction Manual

Catalog Nos. SWB-10L-1-110 / 220
SWB-10L-2-110 / 220
SWB-20L-1-110 / 220
SWB-20L-3-110 / 220

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Version 05E
Revised on: 2023/03/14

Packing list

SWB-10L-1-110 / 220 or SWB-10L-2-110 / 220 or
SWB-20L-1-110 / 220 or SWB-20L-3-110 / 220:

- 1 x Stirring Water Bath
- 1 x Transparent Lid
- 1 x Stainless Steel Bottom Plate
- 1 x US Plug Power Cord or
  1 x Euro Plug Power Cord or
  1 x UK Plug Power Cord or
  1 x Israel Plug Power Cord
- 1 x Stirring Water Bath Instruction Manual

Signed:
Date:

Major Science is liable for all missing or damaged parts / accessories within 7 days after customer received this instrument package. Please contact Major Science immediately regarding this issue. If no response within such time period from consignee party, that will be consignee party's whole responsibility.

Table of Contents

Warning

Major Science Stirring Water Bath has been tested and found to comply with safety limits for the CE regulation. Also, Stirring Water Bath is RoHS compliant to deliver confidence product which meets the environmental directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. It is strongly recommended the user to read carefully the following points before this equipment is operated.

1. Read and follow carefully the manual instructions.
2. Do not alter the equipment. Failure adhered to these directions could result in personal and/ or laboratory hazards, as well as invalidate equipment warranty.
3. Use a properly grounded electrical outlet of correct voltage and current handing capacity.
4. Disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel.
5. In the event, solution is accidentally spilled into the instrument, disconnect grounded plug and the user must carry out appropriate decontamination measurements. For instance, turning it upside down to avoid solution contacting the internal components. Remove bottom cover and inspect to assure solution has not contacted elements, thermostat or connector. Replace damaged parts.
6. Do not use in the presence of flammable or combustible material; fire or explosion may result. This device contains components, which may ignite such materials.
7. Refer maintenance and servicing to qualified personnel.
8. Ensure that the system is connected to electrical service according to local and national electrical codes. Failure to properly connection may create fire or shock hazard.

9. Ensure the appropriate used materials and correct operation to avoid possible hazards of explosion, implosion or release of toxic or flammable gases arising from the materials being overheated.
10. Always use the appropriate protection to remove the lid, and to avoid burning your hand whilst operating this instrument.

ATTENTION: Hot surface!

11. The unit shall be operated Only by qualified personnel.

Safety Information

Use the high level of precautions against any electrical device. Before connecting with the electrical supply, check the supply voltage is within the range stated at the rating label, and this device must be earthed. Place the unit in a safe and dry location and MUST NOT touch things in the surrounding. Also do follow the safety precautions for chemicals / dangerous materials, and hot surface. If needed, please contact qualified service representatives or service@majorsci.com

Environmental Conditions

Ensure the instrument is installed and operated strictly in the following conditions:

- ≤95% RH
- 75 KPa-106 Kpa
- Altitude not to exceed 2000 meters
- Ambient ~ 40℃ operating temperature

Avoiding Electrical Shock

Follow the guidelines below to ensure safe operation of the unit.
Stirring Water Bath series has been designed for use with shielded wires thus minimizing any potential shock hazard to the user. Major Science recommends against the use of unshielded wires.

To avoid electrical shock:

1. In the event of solution is accidentally spilled into the instrument. It must be

dried out for a period of time, at least 2 hours, and restore it to NORMAL CONDITION before each operation.

2. NEVER connect or disconnect wire leads from the power jacks when the power is on.
3. WAIT at least 5 seconds after stopping a run before handling output leads or connected apparatus.
4. ALWAYS make sure that hands, work area, and instruments are **clean** and **dry** before making any connections or operating the equipments.
5. ONLY connect the power cord to a properly grounded AC outlet.

Avoiding Damage to the Instrument

1. Do not attempt to operate the device if it is damaged.
2. Protect this unit from physical damage, corrosive agents and extreme temperature (direct sunlight etc).
3. For proper ventilation and safety concerns, keep at least 10 cm of space behind the instrument, and at least 5 cm of space on each side.
4. Do not operate Stirring Water Bath Incubator in high humidity environments (> 95%), or where condensation may occur.
5. Prior to using any cleaning or decontamination methods other than manufacturer's recommendation, users should check with the manufacturer's instruction to confirm the proposed method will not damage the equipment.

Equipment Operation

Follow the guidelines below to ensure safe operation of the unit:

1. Check the displayed temperature figure and external temp. Place a probe to see if it is over temperature and check if it well function in the case of a single fault at least once per day.
2. Never access any HAZARDOUS LIVE parts, and/or dangerous chemistry or other material to prevent possible hazards of explosion and damages.

Symbols

The symbols used on Stirring Water Bath are explained below.

Used on Stirring Water Bath to indicate an area where a potential shock hazard may exist.

Used on Stirring Water Bath to indicate a warning. Consult the manual to avoid possible personal injury or instrument damage.

ATTENTION: Hot surface!

Used on the Stirring Water Bath to indicate a disposal instruction.
DO NOT throw this unit into a municipal trash bin when this unit has reached the end of its lifetime. To ensure utmost protection of the global environment and minimize pollution, please recycle this unit.

Section 1 Introduction

1.1 Overview

Major science's stirring water bath series is a unique designed product line. Its built-in magnetic stirring mechanism provides the similar or even better mixing & temperature control performance, like other shaking water bathes, and its pricing is close to normal water bath. The digital control, user temperature calibration, larger LCD display and optional Data logging and Function Control software packages are all its special features. More importantly, Stirring Water Bath series is RoHS compliant and designed to comply with the CE regulation.

SWB-10 series

SWB-20 series

1.2 Product Description

Major Science stirring water bath applies the principle of magnetic stirring function to achieve high water temperature uniformity inside the water bath. Moreover, a stirrer inside a flask or a beaker placed inside the water bath surrounding by water can still be driven. 10L stirring water bath series contains two modes. SWB-10L-1 is equipped with one stirring mechanism, whereas SWB-10L-2 is equipped with two stirring mechanisms. SWB-10L-2 is a more advance mode, which is designed for a higher level of experimental demand.
Alternatively, 20L stirring water bath series is a big capability product line. Obviously, it contains all the features and advantages of 10 liter stirring water bath series. 20L stirring water bath series contains two modes. SWB-20L-1 is equipped with one stirring mechanism, whereas SWB-20L-3 is equipped with three stirring mechanisms. SWB-20L-3 is a more advance mode, which is

designed for a higher level of experimental demand.

Features:

Microprocessor control with digital performance and great temperature control accuracy
Great temperature controlled performance
LCD screen showing temperature and timer simultaneously
Stirring speed control
Stirring function for both water bath and flask or beaker
User temperature calibration
Built-in water agitation
One or dual stirring mechanism capability for SWB-10 series
One or three stirring mechanism capability for SWB-20 series
Optional Data Logging software package is available
Optional Function Control software package is available

Section 2 Technical Specification

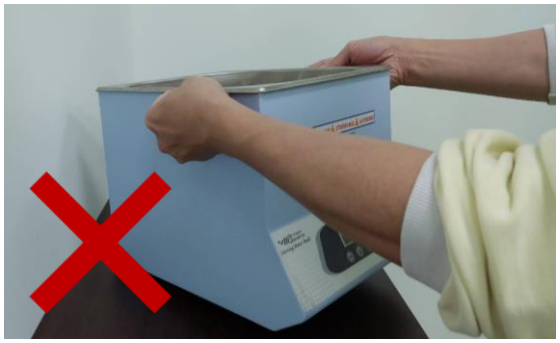
Controller	Digital Microprocessor Controller
Power	600W for SWB-10L series
	800W for SWB-20L series
Display	LCD
	User friendly operating
	Time and Temperature can be seen at the same time
Safety Device	Warning indication on screen with alarm and automatically shut down
Stirring Speed	400~1500rpm
Number of Stirring Mechanism	1 for SWB-10L-1
	2 for SWB-10L-2
	1 for SWB-20L-1
	3 for SWB-20L-3
Bath Temperature	5°C above ambient to 99°C
Temperature Uniformity	±0.2°C @ 37°C
Temperature Accuracy	±0.2°C @ 37°C
Bath Tank Material	304 stainless steel
Bath Inner Dimension	240 x 300 x 150mm (W x L x H) for SWB-10 series
	300 x 500 x 150mm (W x L x H) for SWB-20 series
Bath Capability	approx. 10 L for SWB-10L series
	approx. 20 L for SWB-20L series
Lid Material	polycarbonate material assembled with SUS304 stainless steel construction
Operating Temperature	Ambient ~ 40°C
Unit Dimension	255 x 355 x 240mm without Lid (W x L x H) for SWB-10 series
	330 x 540 x 240mm without Lid (W x L x H) for SWB-20 series
Construction	Painted iron metal
Data Log	RS 232
	Data Log software package available
Weight	approx. 9.0kg for SWB-10L series
	approx. 14.0kg for SWB-20L series
Rated Voltages	110V~ or 220V~; 50/60Hz

Section 3 Installation Instructions

Insert the stainless steel bottom plate into the bath of Stirring Water Bath. If necessary, put the lid on the top of Stirring Water Bath carefully during operating. Also, it must be placed on a sturdy and level surface in a safe, dry place, and pour the appropriate amount of deionized water into the bath, it is ready for operation.

Safety precaution for move equipment :

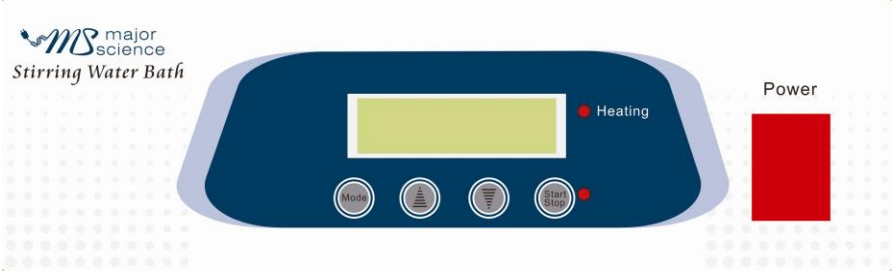
1. Switch off the power and remove the power cord.
2. When moving, hold the bottom plate , **DO NOT** hold the SUS tray to cause SUS tray separate with device and dropping.



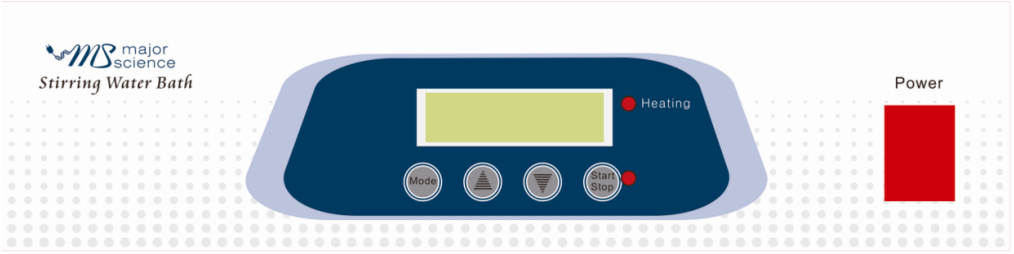
Section 4 Operation Instructions

4.1 Controls and Features

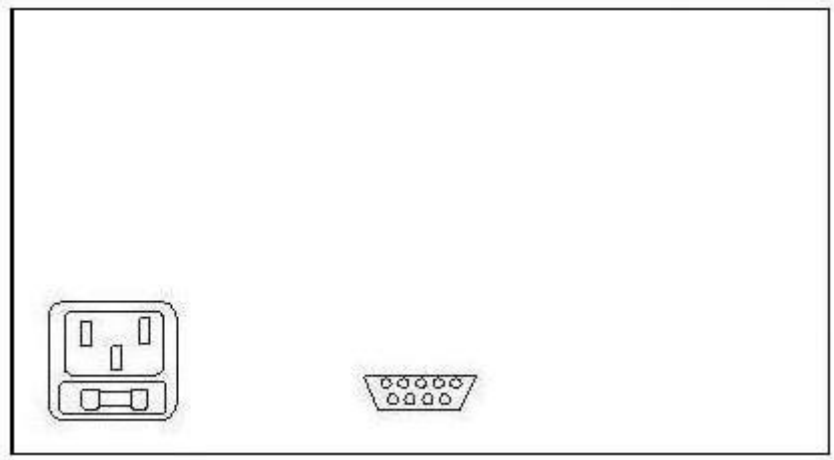
Please refer to following page for the location of the following controls and features.



SWB-10L series



SWB-20L series



Rear of Unit

1.  **Key** – to increase either temperature or time or speed value
2.  **Key** – to decrease either temperature or time or speed value
3. 

Key – activate or stop the unit.
4. 

Key – set or select mode

5. **Heating** –This LED light indicates temperature is increasing.

6. **AC Power Switch** – to switch the unit power On/OFF

7. **AC Power Cord and Fuse Holder** – Power Cord Socket and Fuse Holder

8. **RS232 Connected Port –** for Data Log

4.2 Start the operation

1. Place Stirring Water Bath on a sturdy and level surface in a safe, dry place, away from laboratory traffic.

2. Ensure that the AC power switch is OFF, then plug the three-pronged power cord into a grounded three-prong AC outlet of the appropriate voltage (110V or 220V as indicated on the rating sticker near the AC cord on the back of the unit).

3. Pour appropriate amount of deionized water into the bath of Stirring Water Bath.

Note:
The bath can only endure the deionized water; other substances like anti-freeze agents, anti-rust agents or any acid or alkaline fluids are prohibited.
Also, it is suggested to drain out the water regularly instead of leaving it in the bath after you use the device.

4. Turn the AC power ON.

5. Run temperature calibration procedure when using the instrument first time (see page 12).

6. Press 

Key whilst temperature figure on the LCD display is flashing, and then press  or  Key to adjust the desired temperature.

7. If setting heating time is required, press 

Key first whilst timer figure on the LCD display is flashing, and then press  Key or  Key to adjust timer in HH:MM format upon your request. It will stop automatically when timer is up.

8. Press 

Key whilst stirring speed figure on the LCD display is flashing, and then press  or  Key to adjust the desired stirring speed.

9. Press the 

Key to start heating. Use  Key or  Key to select “Ready Yes” on the LCD display and then press 

again to start operation or select “Ready No” on the LCD display and press 

key to come back setting mode.

10. If it is necessary to adjust timer during heating, press 

again to deactivate heating.

11. Press 

Key again to stop the unit.

Section 5 Temperature Calibration

Stirring Water Bath with appropriate water amount has been calibrated as a set. But, whether or not lid applied, water amount, and stirring speed might have different levels of influence to cause different results. In addition, the surrounding room temperature condition also has an impact on temperature performance. For optimum accuracy temperature control or while different operating condition, Stirring Water Bath should be calibrated in accordance with the procedure outlined below.

1. Insert a third party certificated thermometer into the central area of bath, simulating the real operating condition.
2. Please press power OFF/ON key and 

Key simultaneously, and don't release until display between 1000 ~ 1500 located on the lower left area of display is presented. Then release  Key them immediately; Stirring Water Bath is now under Calibrated Mode.
3. Press 

key first to enable the alteration of temperature parameter. Press  or  Key to preset display value, to the point you want to assess temperature accuracy. And then press 

Key.
4. When the temperature reach the setting point. Display will show "Stabilizing" on lower left area, at this time, timer will automatically countdown for 30 minutes to make sure the whole system reach heat balance. When timer is up, the temperature figure become flashing and display shows "Ready for Calibration".
5. Adjust display value to the same figure as thermometer. And then press 

Key.

6. The calibration procedure is finished. Please wait for few more minutes that microprocessor will auto adjust temperature.

Section 6 Data Log Software Instructions

NOTE: All rights reserved by Major Science co., ltd.

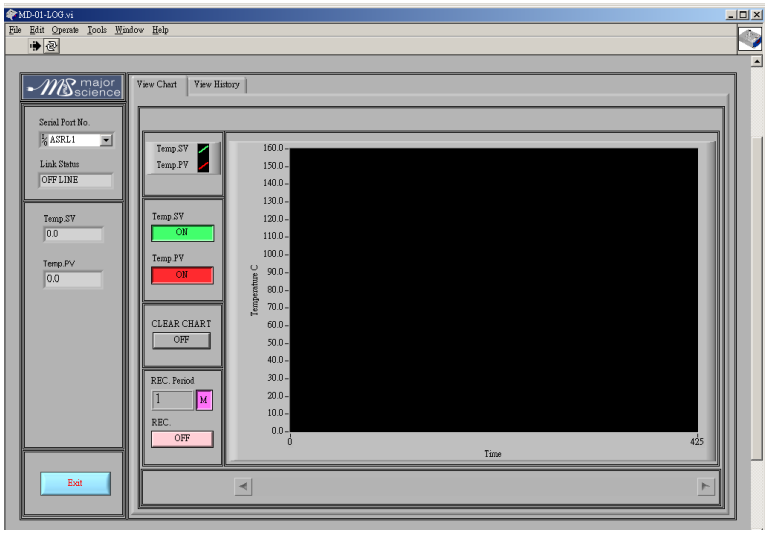
Installation Instruction

1. Insert the CD into CD Rom and press the setup.exe in the Installer Folder for installation.

2. Follow up the instructions shown on the computer screen to complete the installation.

Operation Instruction

1. Start the software program and then the below screen will be shown. There are two main sections, View Chart, and View History in this software.



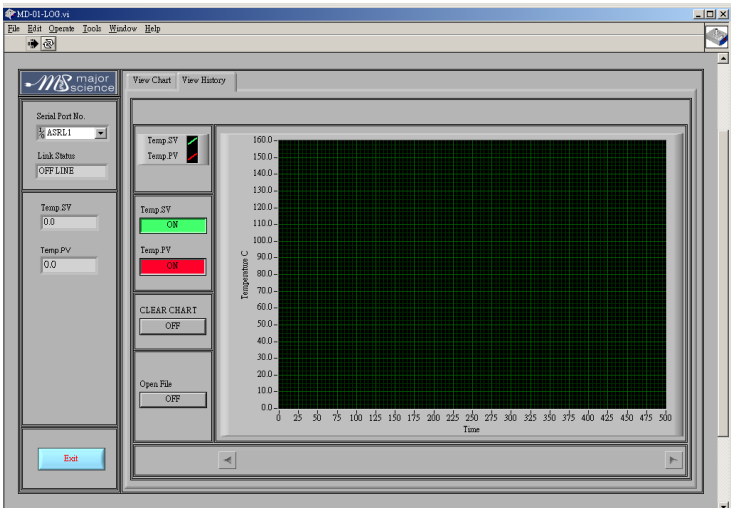
2. View Chart Section:

Serial Port No.	Communication port selections between computer and Stirring Water Bath
Link Status	Indication whether Stirring Water Bath is linked with computer or not

EXIT	To exit this software
Temp. SV	The set temperature value
Temp. PV	The real temperature value being measured
Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
REC. period	To set up how frequent the operation data is recorded
REC. period ON / OFF	To start or stop recording
CLEAR CHART OFF	To clear up the curves in the table
	Enlarge the record table
	Move the record table

3. View History Section:

Serial Port No.	Communication port selections between computer and Stirring Water Bath
Link Status	Indication whether Stirring Water Bath is linked with computer or not
Temp. SV	The set temperature value
Temp. PV	The real temperature value being measured
Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
CLEAR CHART OFF	To clear up the curves in the table
Open File	ON: to view historic record data OFF: No historic record data is shown
	Enlarge the record table
	Move the record table



Section 7 Function Control Software Instructions

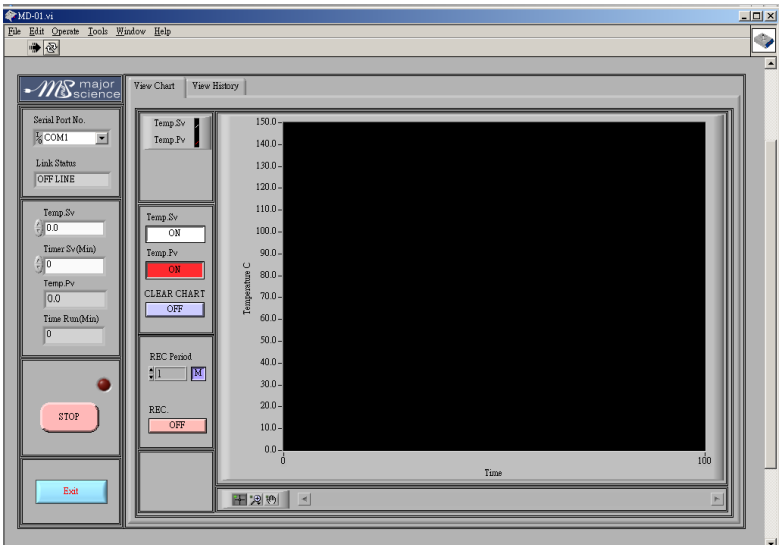
NOTE: All rights reserved by Major Science co., ltd.

Installation Instruction

1. Insert the CD into CD Rom and press the setup.exe in the Installer Folder for installation.
2. Follow up the instructions shown on the computer display screen to complete the installation.

Operation Instruction

1. Start the software program and then the below screen will be shown.
   There are two main sections, View Chart, and View History in this software.

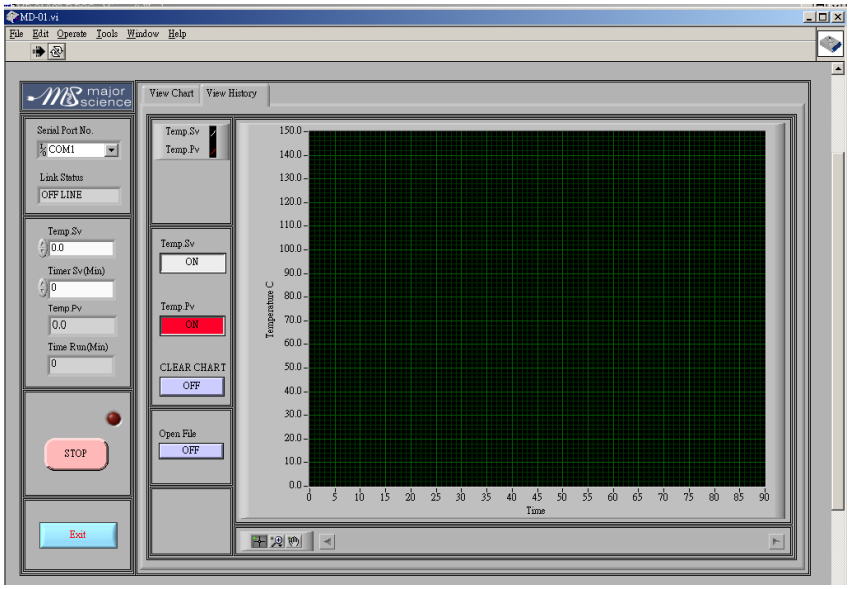


2. View Chart Section:

Serial Port No.	Communication port selections between computer and Stirring Water Bath
Link Status	Indication whether Stirring Water Bath is linked with computer or not
STOP	For Stirring Water Bath ON / OFF control

EXIT	To exit this software
Temp. SV	The set temperature value
Temp. PV	The real temperature value being measured
Timer SV (Min)	To set operation time
Time RUN (Min)	To indicate how many minutes Stirring Water Bath is being operated
Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
REC. period	To set up how frequent the operation data is recorded
REC. period ON / OFF	To start or stop recording
	Enlarge the record table
	Move the record table

3. View History Section:



Serial Port No.	Communication port selections between computer and Stirring Water Bath
Link Status	Indication whether Stirring Water Bath is linked with computer or not
STOP	To stop the software and instrument
EXIT	To exit this software
Temp. SV	The set temperature value
Temp. PV	The real temperature value being measured
Timer SV (Min)	To set operation time
Time RUN (Min)	To indicate how many minutes Stirring Water Bath is being operated

Temp. SV ON / OFF	To show the temp set value on the table or not
Temp. PV ON / OFF	To show the real time temp value on the table or not
CLEAR CHART OFF	To clear up the curves in the table
Open File	ON: to view historic record data OFF: No historic record data is shown
	Enlarge the record table
	Move the record table

Section 8 Troubleshooting Guide

Many operating problems may be solved by carefully reading and following the instructions in this manual accordingly. Some suggestions for troubleshooting are given below. Should these suggestions not resolve the problem, please contact our SERVICE DEPARTMENT or a distributor in your region for assistance. If troubleshooting service is required, please include a full description of the problem.

Problem	Solution
LED does not light up	Check the **FUSE**
	Ensure that the AC power switch is ON
	Check the three-pronged power cord are properly plugged into a grounded three-prong AC outlet of the appropriate voltage

✧ **Compatible Bottle of SWB-20L-3**

The size of different brand bottle may vary slightly. Please refer the following table as reference only.

	≦500ml	1L	2L
 **Beaker**	3	3	2 (position 1 & position 3)
 **Erlenmeyer flask**	3	2 (position 1 & position 3)	2* (position 1 & position 3)
 **Bottle**	3	3	2 (position 1 & position 3)

Teflon Stir Bar, Cylindrical, L ≦60 mm.

*When 2L Erlenmeyer flask is applied, it may be too high for the lid of water bath to put on.

8.1 Maintenance

Stirring Water Bath may be cleaned with a moist cloth containing a mild soap solution. The blocks are aluminum and may be cleaned with any of the commercial aluminum cleaners on the market.

Section 9 Ordering Information

Cat. No.	Description
SWB-10L-1-110/220	Stirring Water Bath (10L) with 1 built-in stirrer
SWB-10L-2-110/220	Stirring Water Bath (10L) with 2 built-in stirrers
SWB-20L-1-110/220	Stirring Water Bath (20L) with 1 built-in stirrer
SWB-20L-3-110/220	Stirring Water Bath (20L) with 3 built-in stirrers

ACCESSORIES

SWB-LID10	Transparent lid for 10L stirring water bath
SWB-LID20	Transparent lid for 20L stirring water bath

Section 10 Warranty

Major Science warrants apparatus of its manufacture against defects in materials and workmanship, under normal service, for ***one year from the shipping date to purchaser***. This warranty excludes damages resulting from shipping, misuse, carelessness, or neglect. Consumable parts(Transparent Lid and Stirring Rotor) are not covered by our warranty. Major Science's liability under the warranty is limited to the receipt of reasonable proof by the customer that the defect is embraced within the terms of the warranty. All claims made under this warranty must be presented to Major Science within one year following the date of delivery of the product to the customer.

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