



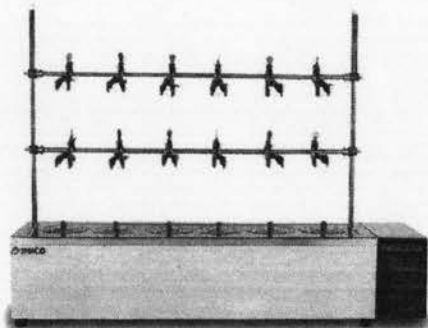
INSTRUCTION MANUAL



Laboratory Equipment Pty Ltd

Laboratory Equipment Pty Ltd
email: sales@labec.com.au
Ph: 02 9560 2811 • Fax: 02 9560 6131
www.labec.com.au

Soxhlet Water Bath Operation Manual



Model : J-BS3D

Please read this Operation Manual carefully before use.

Table of Contents

Use of Operation Manual	3
To SUPERVISOR in charge of this equipment	4
SAFETY SYMBOLS	5
Safety Precautions	6
1. Intended use of the equipment	8
2. Features of equipment	9
3. Appearance	10
4. Installation	11
5. Name & functions of the controller	12
6. Maintenance and service	16
7. Trouble shooting	17
8. After-sales service	18
9. Specification	
9.1 Technical Specification	19
9.2 Assembly Drawing	20

Use of Operation Manual

- Please read through and understand this Operation Manual before operating the product.
After reading, always keep the manual nearby so that you may refer to it as needed.
When moving the product to another location, be sure to bring the manual as well.
- If you find any incorrectly arranged or missing pages in this manual, they will be replaced.
If the manual it gets lost or soiled, a new Operation Manual can be purchased.
In either case, please contact your JISICO agent, and provide the "Model No." given on cover.
- This manual has been prepared with the utmost care; however, if you have any questions, or note any errors or omissions, please contact your JISICO distributor or agent.

To SUPERVISOR in charge of this equipment.





- If the operator does not read the language used in this manual, translate the manual into appropriate language.
- Help the operator in understanding this manual before use in operation.
- Keep this manual near the tester for easy access by the operator.

Reproduction and reprinting of this operation manual, whole or partially, without our permission is prohibited.
Both unit specifications and manual contents are subject to change without notice.

NOTE SAFETY SYMBOLS

This operation manual and this product use the following safety symbols.

Please keep in mind the meaning of each of the symbols to ensure safe use of the product and to prevent any damages, accidents, or problems resulting from negligence of these safety symbols. (As using symbols may depend on the product, not all of the symbols may be used.)

SAFETY SYMBOLS	
 DANGER	<ul style="list-style-type: none"> ● Indicates the possibility of personal injury or death. Never fail to follow the operating procedure. ● Do not proceed beyond a WARNING sign until the noted conditions are fully met to satisfactory and understood.
 WARNING	<ul style="list-style-type: none"> ● Indicates the existence of possibility of damage to the product or to the operator in operation. ● Never fail to follow the operating procedure.
 CAUTION	<ul style="list-style-type: none"> ● Indicates the existence of possibility of damage to the product or to the operator in operation when cautions are not observed and followed properly.
 NOTE	<ul style="list-style-type: none"> ● Indicates additional information such as general warning, caution, risk of danger, and operating procedure. ● When this mark is indicated on the product, refer the relevant section of the Operation Manual.

Safety Precautions

The following safety precautions must be observed and followed to avoid fire hazard, electrical shock, accidents, and other failures. Keep them in mind and make sure that all the precautions are observed and followed properly. **LABCC** . . . assumes no liability nor any responsibility against any damages, accidents, or problems resulting from negligence of the precautions.



Users

- This product must be used only by qualified personnel who understand the contents of this operation manual.
- If it is handled by disqualified personnel, personal injury may result. Be sure to handle it under supervision of qualified personnel.



Purpose of use

- If the product is to be used for purposes not described in this manual, contact your JISICO agent in advance.



Input Power

- Use the product with the specified input power voltage.
- For applying power, use the AC power cable provided. The shape of the plug differs according to the power voltage and areas. Use the cable which is suitable for the line voltage used.



Fuse

- With products with a fuse holder on the exterior surface, the fuse can be replaced with a new one.
- When replacing a fuse, use the one which has appropriate shape, ratings, and specifications.



Cover

- There are parts inside the product which may cause physical hazards. Do not remove the external cover. If the cover must be removed, contact your agent in advance.



Installation

- When installing products be sure to observe Installation Precaution described in this manual.
- To avoid electrical shock, connect the protective ground terminal to electrical ground (safety ground).
- When applying power to the products from a switchboard, be sure work is performed by a qualified and licensed electrician or is conducted under the direction of such a person.
- Be sure to use the AC power cable provided.



Relocation

- Turn off the power switch and then disconnect all cables when relocating the product.
- Use two or more persons when relocating the product which weights more than 20 kg. The weight of the products can be found on the rear panel of the product and/or in this operation manual.
- Use extra precautions such as using more people when relocating into or out of present locations including inclines or steps. Also handle carefully when relocating tall products as they can fall over easily.
- Be sure the operation manual be included when the product is relocate



Maintenance

- To avoid electrical shock, be absolutely sure to unplug the AC power cable or stop applying power before performing maintenance or checking.
- Do not remove the cover when performing maintenance or checking. If the cover must be removed, contact your " " , agent in advance.
- To maintain performance and safe operation of the product, it is recommended that periodic maintenance, checking, cleaning, and calibration be performed.



SERVICE

- Internal service is to be done by " " service engineers.
- If the product must be adjusted or repaired, contact your JISICO agent.

1. Intended use of the equipment.

Soxhlet water bath is designed to perform Soxhlet extraction by heating Soxhlet extractors (or Soxhlet flasks) for the extraction of a lipid from a solid material, and which Soxhlet extractors, a piece of laboratory apparatus invented in 1879 by Franz von Soxhlet.

Soxhlet water bath's usage is not limited to the extraction of lipids. Typically, a Soxhlet extraction is only required where the desired compound has only a limited solubility in a solvent, and the impurity is insoluble in that solvent. If the desired compound has a high solubility in a solvent then a simple filtration can be used to separate the compound from the insoluble substance.

Soxhlet water bath is designed and manufactured suitable for extractions as well as distillations, and maximum 6 multiple runs of experiment at the same time.

Our Soxhlet water bath design includes a number of physical and mechanical features, and electronic temperature control, and to maintain an even temperature, the temperature control system includes the temperature sensor which is responsive enough to maintain uniform temperatures for long period of time.

The choice of fluid to be used within baths depends on number of factors. The most important factors to consider include the recommendations of the " " the bath manufacturer, whether the bath is designed for a specific fluid or group of fluids, the sensor being used to measure fluid temperature and its reliability, and the temperature range over which it will be tested. Water is most commonly used fluid in water baths. However, a variety of high-dielectric fluids are available for temperatures below 0°C (32°F) and above 100°C (212°F), where the use of water would not be feasible. The fluid should have the right viscosity for the operating temperature range to avoid any accidents resulting from heat-concentration.

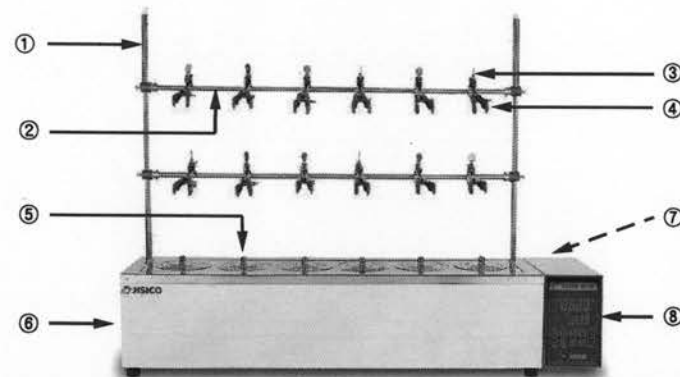
It is important to match the fluid to the operating temperature range of the baths in use. A high-temperature fluid in a cold bath would result in an excessively viscous fluid, which could negatively impact the ability of the circulating mechanism to maintain an even temperature distribution, or worse damage to the circulating mechanism. Conversely, using a fluid at a temperature **above its flash point is very hazardous, resulting a fire.**

When operating heating baths, there are a number of **safety issues to keep in mind.** Heating baths are inherently dangerous as they are often used in conjunction with flammable liquids, or liquids that are at extremely elevated temperatures. Baths should always be used on top of durable surfaces that are stable and will not collapse. They should also be kept away from other flammable materials as their radiant heat could cause combustion. Finally, they should be allowed to cool completely before being moved.

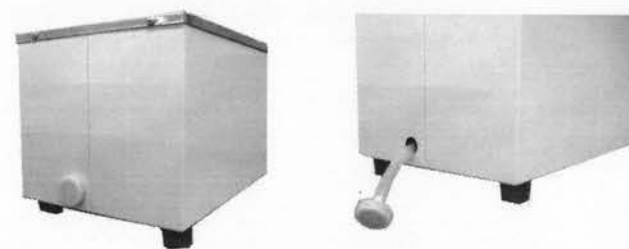
2. Features of equipment.

- Designed for the extraction of a lipid from a solid material.
- The upper parts and bath are made of stainless steel plate.
- The utility rack includes 12 clamps, 12 clamp holders, 2 vertical rods, and 2 horizontal cross bars, on which the glass apparatus can be fixed, and equipment is supplied without any glass apparatus.
- Accurate, reproducible, reliable temperature control in an easy to use control unit.
- Settings for the temperature and timer can be easily input using the up and down keys, and the settings appear on a digital display.
- P.I.D. controller maintains uniform temperature of reservoir.
- CPU with software which is capable of digital P.I.D.-Auto tuning is equipped and contained regulation device of supper safety class such as the regulation function for temperature correction for Pt100, heating and others.
- Digital readout displays pre-set temperature and current operating temperature.
- Overheating is prevented by automatic shut-off circuit.
- Attaching sheath heater with excellent heat-resistant material including resistant to corrosion ensures convenient storage maintenance and electrical safety.
- Safety Alarm (Buzzer) is installed to give warning alarm.

3. Appearance



- ① Vertical rods (2 ea)
- ② Horizontal Heater cross bars (2 ea)
- ③ Clamp holders (12 ea)
- ④ Clamps (12 ea)
- ⑤ Opening ring (6 set)
- ⑥ Water Drain Valve - located on the left side of the equipment
- ⑦ Power Plug - located on the back side of the equipment
- ⑧ Control unit - located on the right front side of the equipment



Water Drain Valve (Magnetic type)

4. Installation.

4.1 Precautions for Installation

- This equipment is designed and manufactured to operate properly only in use of rated voltage. Refer to specification section of this manual for rated voltage before installation.
- Use AC power cable that comes with (or installed to) the product.
- Do not touch the Power Cord wet handed.
- Avoid locations where the equipment is exposed to direct sunshine.
- Do not place the equipment in a corrosive atmosphere.
- Do not use the equipment in a flammable atmosphere.
- Do not use the equipment where ventilation is poor.
- Do not locate the equipment in a dusty location.
- Do not use in an unstable place that are subject to vibrations.
- Avoid locations of high humidity.
- Avoid locations where the equipment is exposed to high temperature.
- Recommended temperature range : 20℃ to 30℃
- Avoid locations of altitude higher than 2000m.
- Use the equipment indoors only.
- Secure adequate space around the power plug.

4.2 How to install

- Use with a minimum distance all around of 20cm from walls of other items.
- Locate in a flat place.
- Connect the power cord to an outlet with earthing point.
- In case of connecting to an outlet without earthing point, connect lead wire to the earth after connecting grounding adapter.

4.3 How to ground Earth wire

⚠ WARNING

- Earth wire must be grounded to prevent any electrical accidents.
- Improper or no grounding may cause electrical shock.
- Grounding terminal is included in the power plug.
- Therefore, there is no need to earth if plug is connected to a consent with grounding terminal.
- If grounding terminal with consent is not available, install adapter to plug to ground earth wire from green terminal or install earth wire to the grounding terminal of the equipment.

⚠ NOTE

- Grounding earth wire to a water tap is not recommendable, since water supplying pipes are usually connected by plastic tubes.
- Don't ground earth wires to gas pipes, telephone line, nor lightning rod.

5. Name and functions of controller

5.1 Name of the controller



[PID Controller]

- ① : PV display window : Indicating current temperature
- ② : SV / Time display window : Indicating temperature setup and time.
- 🔦 : Heating Status Display : Lamp is turned on when heater is ON.
- 🔦 : ALARM Status Display : Lamp blinks when it is alarmed.
 - *A* type : Lamp is turned off when timer is OFF.
 - *B* type : Lamp is turned off when temperature is below *A-OF* after timer is OFF.
- 🕒 : TIMER Function Status Display : Lamp is turned ON when timer function is in use.
 - ⏴A : Lamp blinks below setting temperature and Lamp is turned on when temperature is reach the setting temperature.
 - ⏴B : Lamp is turned on when press the RUN key.
- MODE : MODE Select Key : Used for setting up temp. time correction and other related parameters.
- ⬅ : Shift Key : Used to move decimal point of setting value.
- ⬆ : Increase Value Key : Used to change setting value.
- A/T : Auto Tuning Status Display : Lamp blinks when automatic tuning is in process.
- A/T TMR : Auto Tuning and Timer Key : AT key function is starts if you press AT key for more than 4 seconds.
- RUN/STOP : Heater RUN/STOP Key
- POWER ON/OFF : POWER On/Off Key

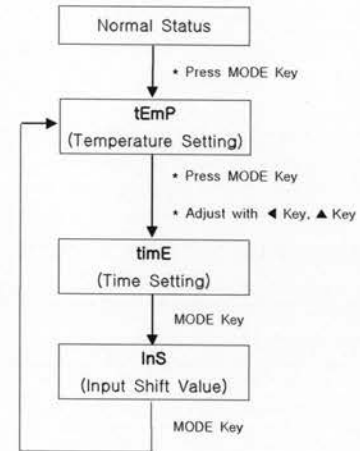
● Key switch function feature of Temperature controller.

- Power ON / OFF Key : Turns Power ON or OFF. (It does NOT operate in setting mode.)
- RUN/STOP Key : RUN/STOP Heater. (It does NOT operate in setting mode.)
- MODE Key :
 - Press MODE Key once in Normal Display Mode and changes to Temperature, Time Setting Mode.
 - Press MODE Key for over 6 seconds and changes to individual Parameter Setting Mode.
 - Press Mode key once again and the parameter changes to another parameter, and pressing the MODE Key for more than 2 seconds ends Parameter Setting Mode, and returns to Normal status.
- Shift Key :
 - Moves the decimal point of setting data in each MODE.
 - Press Shift Key for over 6 seconds and changes to Factory Setting Mode.
- Increase setting value Key : Increase set-value of each decimal point
- AT (Auto tuning key) :
 - Displays present time, then temperature in turn when At key is pressed in Normal Display Mode.
 - AT key function is starts if you press AT key for more than 4 seconds in Normal Display Mode.
 - By pressing AT key for more than 4 seconds during Auto Tuning Process ends Auto Tuning Process instantly.
 - Displays present temperature when AT key is pressed once during Auto Tuning Process.

5.2 Configuring controller.

5.2.1 Setting Temperature and Time MODE.

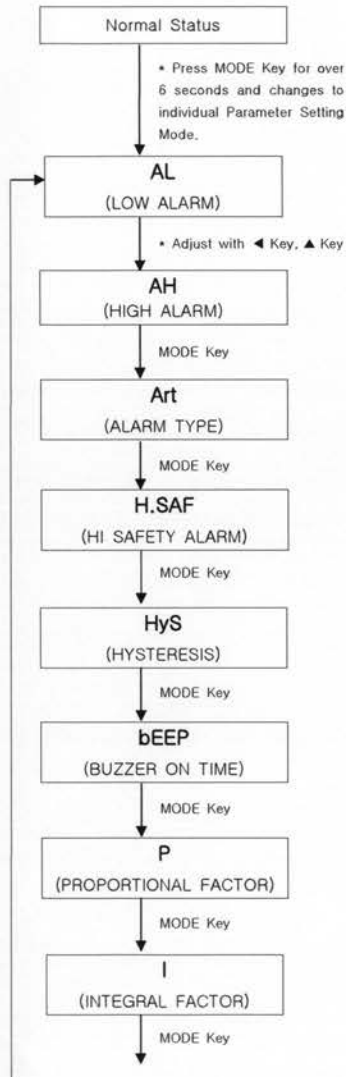
CPU with software which is capable of digital P.I.D.-Auto tuning is equipped and contained regulation device of supper safety class such as the regulation function for temp. correction for Pt100, heating and others.



- 1) Temperature setting range
 - PT TYPE : -99.9℃ ~ +299.9℃
 - Max. temperature is adjustable.
- 2) Time Setting Range
 - Day, Time MODE (TIME SCALE : d.h) : 0-99 days, 23 hours
 - Hour, Minute MODE (TIME SCALE : h.m) : 0-99 hours, 59 minutes
 - Minute, Second MODE (TIME SCALE : m.s) : 0-99 minutes, 59 seconds
 - * If TIME set-value is 00.00 , it will operate continuously.
- 3) InS (Input Shift Value)
 - = Input Deviation Value Correction
 - : -19.9-+19.9PT

*Press MODE Key for more than 2 seconds, it will return to NORMAL Status

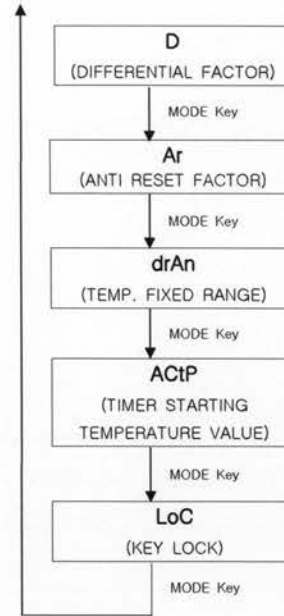
5.2.2 Controller Parameter Configuration Mode



- 1) AL : LOW ALARM
- 2) AH : HIGH ALARM
- 3) ART : ALARM TYPE

ART	ALARM MODE	ALARM OUTPUT	REMARKS
0	No Alarm		
1	High Low Alarm (Absolute value)		* Can be used as refrigeration
2	High Alarm (Absolute value)		
3	Low Alarm (Absolute value)		* Can be used as refrigeration
4	High Low Alarm (Relative value)		* Can be used as refrigeration
5	High Alarm (Relative value)		
6	Low Alarm (Relative value)		* Can be used as refrigeration

- 4) H.ASF (HI SAFETY ALARM) : 0~99 (PT)
If present temperature is higher than "set value + H.ASF value", then timer stops and changes to STOP MODE.
- 5) HYS (HYSTERESIS TEMPERATURE) : for AH, AL
- 0~29.9 (PT)
ex) If AH=50, High Alarm activates at 50°C, and HYS=0.5 deactivates at 49.5°C.
Same applies for AL.
- 6) BEEP (BUZZER TIME)
: 0~9999sec (0sec = continuous)
- 7) P (PROPORTIONAL FACTOR)
: 0~999.9
- Set automatically after Auto Tuning process.
- 8) I (INTEGRAL FACTOR)
: 0~999.9
- Set automatically after Auto Tuning process.



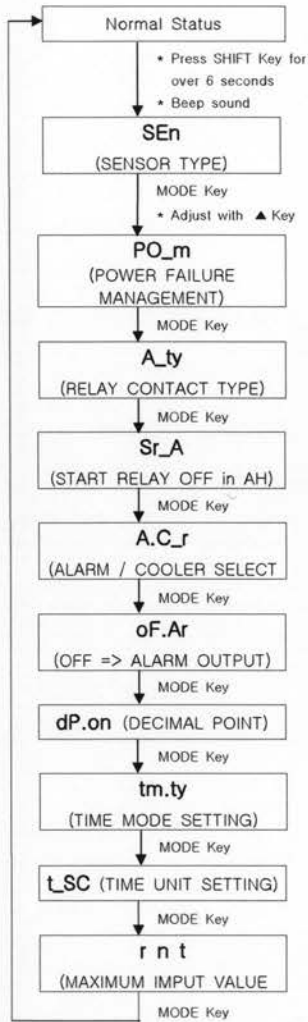
* Press MODE Key for more than 2 seconds, it will return to NORMAL Status

- 9) D (DIFFERENTIAL FACTOR)
: 0~999.9
- Set automatically after Auto Tuning process.
- 10) AR (ANTI RESET FACTOR)
: 0~999.9
- Set automatically after Auto Tuning process.
- 11) DRAN (TEMPERATURE FIXED DISPLAY RANGE)
: Displays present temperature in the range as SET TEMPERATURE.
Ex) If set temperature is 50°C and DRAN is 0.3°C it displays present temperature within range of 49.7~50.3°C as 50°C.
- 12) ACTP (TIMER STARTING TEMPERATURE VALUE)
: Relative value of set temperature
- 13) LOC
: KEY LOCK
- Press Key Lock : YES ==> LOCK
NO ==> UNLOCK

NOTE

- DO NOT CHANGE the SET VALUE, which is FACTORY SET DEFAULT VALUE !
- Changing the SET VALUE may result in MAL-FUNCTIONING !

5.2.3 Controller Factory Configuration Mode



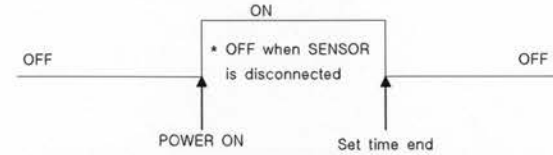
* Press MODE Key for more than 2 seconds.
it will return to NORMAL Status

- DO NOT CHANGE the SET VALUE, which is FACTORY SET DEFAULT VALUE !
- Changing the SET VALUE may result in MAL-FUNCTIONING !

- 1) SEN (SENSOR TYPE)
 - * PT TYPE : Pt display ==> DPT (Default)
JPt display ==> JPt
- 2) PO_m (POWER FAILURE MANAGEMENT)
 - * ON ==> START DRAN, PO_m ON (Default)
OFF ==> PO_m OFF
- 3) A_TY (RELAY CONTACT TYPE)
 - * Displays when "ALARM RELAY" is selected.
(Refer to (5) A.C.R Mode)
- 4) SR_A (START RELAY OFF in HIGH ALARM)
 - * NON => Does not function. (Default)
* OFF => START RELAY OFF.
- 5) A.C_R (ALARM or COOLER relay SELECT)
 - * ALr : ALARM RELAY function (Default)
* Cor : COOLER RELAY function
- 6) OF.AR (ALARM RELAY OUTPUT when OFF or STOP)
 - * ON => ALARM RELAY ON (Default)
* OFF => ALARM RELAY OFF
- 7) DP.ON (DECIMAL POINT DISPLAY)
 - * Displays when selected for Pt sensor.
* ON => Displays decimal point for temperature (Default)
* OFF => No decimal point for temperature
- 8) TM.TY (TIME MODE SETTING)
 - * t_A : Timer is operating after setting temperature.
* t_B : Timer is operating press RUN key.
- 9) T_SC (TIME UNIT SETTING)
 - * Day, Time MODE (d.H)
: 0-99 days, 23 hours
* Hour, Minute MODE (H.m) : DEFAULT SETTING
: 0-99 hours, 59 minutes
* Minute, Second MODE (m.s)
: 0-99 minutes, 59 seconds
* If TIME set-value is 00.00 , it will operate continuously.
- Set automatically after Auto Tuning process.
- 10) r n t (MAXIMUM INPUT VALUE)

5.2.4 Output type

- Main output : * Output by P.I.D control
* On during Heating (Heater LED is ON)
- Start Relay
When used as START RELAY
(when FACTORY CONFIGURATION MODE => SR_A => NON is selected)



5.2.5 How to set automatic tuning for temperature.

- When temperature difference occurs during operation, press **AT** key for 4 seconds, and automatic tuning process will begin, and **AT lamp**(Auto tuning lamp) will start to blink until automatic tuning process is completed.
- When automatic tuning is in process, NEVER change setting values nor OPEN/CLOSE the door until automatic tuning process is completed.
- Press **AT** key for 4 seconds during Auto Tuning Process , and Auto Tuning Process will be stopped instantly.

5.3 How to set temperature.

- 1) Turn on power switch
- 2) Press **MODE** key at full length for 1 second.
Then **tEmP** is shown on display window of PV side.
Press **◀** key and **▲** key to set required temperature.
- 3) After setting the temperature, press **MODE** key once
Then **timE** is shown on display window of PV side.
Press **◀** key and **▲** key to set required time for timer function.
- 4) When setting on all units is finished, pressing **MODE** key at full length for 2 seconds,
and all setup values will be reset as set values and return to normal mode.

5.4 How to operate

- Check rated voltage of the apparatus as well as check the specification.
- Connect the power plug to the power outlet.
- Check whether the water drain valve is closed. If opened, close the water drain valve.
- Fill enough water in the bath carefully not to wet the control head.
- Set the temperature by 5.3 How to set temperature.
- Turn on the **POWER** and **RUN Key** .
- When temperature rises and reaches the setting temperature, the temperature is controlled automatically.
- After the operation is completed, turn **RUN** and **POWER Key OFF**.
- Disconnect the power plug from power outlet.
- Do not move the equipment until the equipment has cooled down completely.

6. Maintenance and service.

6.1 In case of cleaning inside of the bath



- Ensure that the apparatus has cooled down to a safe temperature to touch.
 - Disconnect the power plug from power outlet.
 - Clean the inside part of the bath with sponge or soft clothes getting wet by neutral cleaner.
 - Clean the inside part of the bath again with sponge or soft clothes getting wet by water.
 - Clean with dry clothes.
 - Do not use organic solvent.
 - Do not use flammable or volatile chemicals such as benzene, alcohol to clean.

6.2 In case of cleaning exterior of the equipment

- Disconnect the power plug from power outlet.
- Ensure that the apparatus has cooled down to a safe temperature to touch.
- Clean the exterior of the equipment with sponge or soft clothes getting wet by neutral cleaner.
- Clean with dry clothes.
- Do not use organic solvent.
- Do not use flammable or volatile chemicals such as benzene, alcohol to clean.



- Do not use flammable or volatile chemicals such as benzene, alcohol to clean the equipment.
- This equipment is not designed nor manufactured Explosion-proof, so never place highly flammable material or explosive material inside the bath which may cause an explosion or a fire.

6.3 Cleaning electric parts.

- Clean with dry clothes.

6.4 When the equipment is not used for long time.

- Remove power plug from power outlet.
- Clean with soft clothes.
- Pack the equipment in a appropriate way and store in a safe place for storage.

7. Trouble shooting.

① In case apparatus fails to work at all :-

- Control unit switched off :-
=> Ensure Power is turned on.
=> Ensure unit is on.
- Power supply shortage :-
=> Refer to specification and check whether sufficient power is being supplied.
=> Is the breaker on the side of outer part open?
- Check if lamp is turned down.
=> Check unit in a power outlet that is known to work.
If still does not work, contact your local JISICO agent/distributor & have it repaired.

② In the apparatus inclined?

install the machine horizontally all the time.

③ When temperature difference occurs during operation :-

- => Check whether high frequency welding machine, high frequency sewing machine or large capacity SCR controller generating strong high frequency noise is located near the equipment.
If so, move the equipment to another location.
- => Perform AUTO TUNING (Automatic Tuning Process).

④ When temperature is not raise as accordingly :-

- => Check heater condition for possible physical damage.
- => Perform AUTO TUNING (Automatic Tuning Process).

⑤ In case general failure :-

- => Check unit in a power outlet that is known to work.
If still does not work, contact your local agent/distributor & have it repaired.

8. After-sales service.

8.1 Free repair

Faults which is responsible for manufacture in normal condition can be repaired with free for 1year from purchase date (only, pressure vessel is zero year), and it is desirous to check following items when requesting A/S.

- . Part and condition generated fault
(It is necessary to explain in detail within limit of possibility)
- . Model name
- . Serial Number
- . Purchase date (year, month, date)

8.2 Onerous repair

In following case, it is required to repair with compensation in spite of guarantee period.

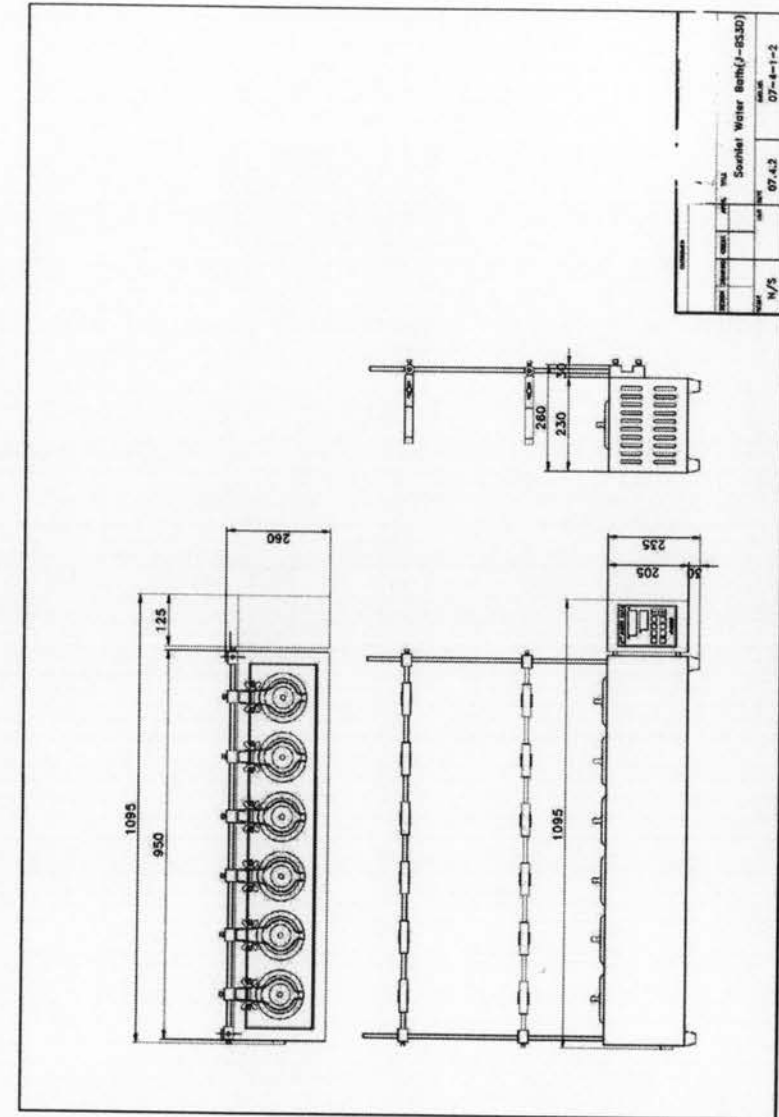
- Fault by user mistake, unsuitable repair or modification
- Fault by negligence for carrying and handling during use
- Fault due to natural disasters such as fire, flood disaster and abnormal voltage
- Fault by using against direction for use.

9. Specification.

9.1 Technical Specification

Model		J-BS3D	
Type		6 hole opening type	
Overall size (W×D×H)		mm	1,090×270×220
Bath inner size (W×D×H)		mm	890×170×130
Capacity		ℓ	19
Temperature	Range	Amb +5℃ ~ 100℃	
	Accuracy	±0.1℃ at 50℃	
	Controller	P.I.D controller	
	Regulator	SSR type	
Thermocouple		Pt 100 ohms	
Heater(Sheath)		W	2,000
Safety device		Water level sensor, over current breaker & fuse	
Timer		99 hours 59min. or infinity	
Material	Interior	Stainless steel plate	
	Exterior	Steel plate with powder coated finish	
Power source		AC220V. 50Hz/60Hz. 1phase	

9.2 Assembly Drawing

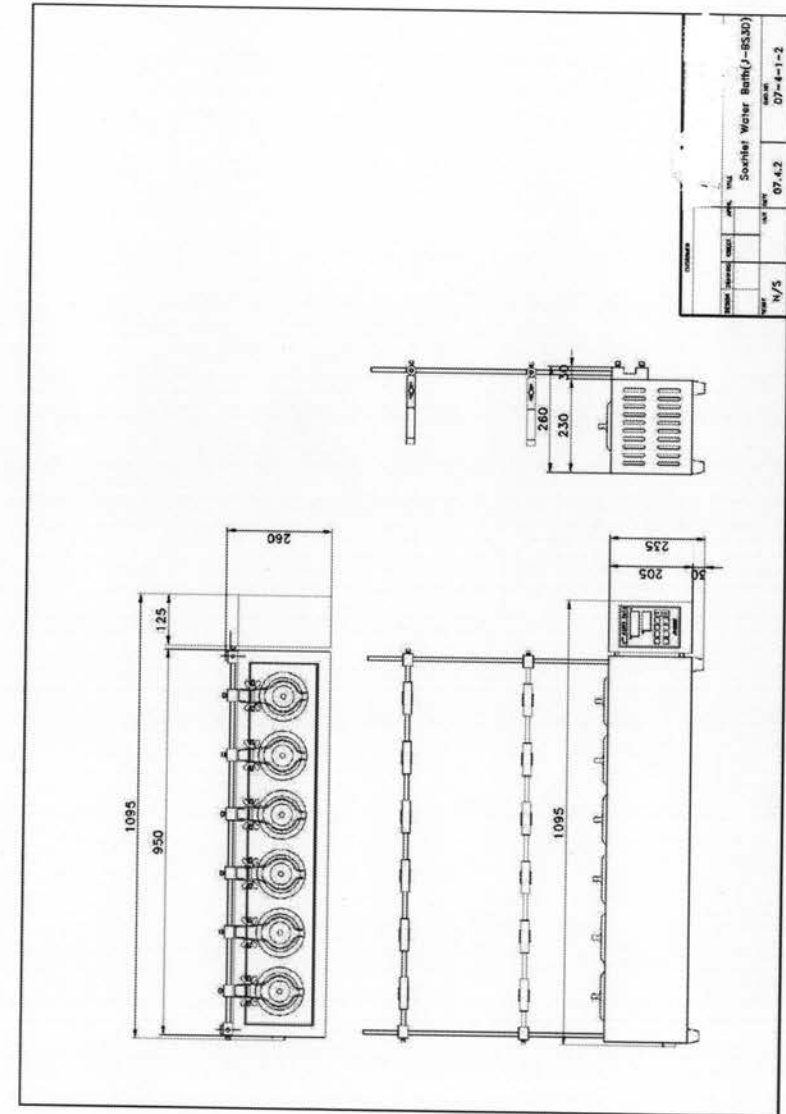


9. Specification.

9.1 Technical Specification

Model		J-BS3D	
Type		6 hole opening type	
Overall size (W×D×H)	mm	1,090×270×220	
Bath inner size (WxDxH)	mm	890×170×130	
Capacity	ℓ	19	
Temperature	Range	Amb +5℃ ~ 100℃	
	Accuracy	±0.1℃ at 50℃	
	Controller	P.I.D controller	
	Regulator	SSR type	
Thermocouple		Pt 100 ohms	
Heater(Sheath)	W	2,000	
Safety device		Water level sensor, over current breaker & fuse	
Timer		99 hours 59min, or infinity	
Material	Interior	Stainless steel plate	
	Exterior	Steel plate with powder coated finish	
Power source		AC220V, 50Hz/60Hz, 1phase	

9.2 Assembly Drawing



7. Trouble shooting.

① In case apparatus fails to work at all :-

- Control unit switched off :-
 - => Ensure Power is turned on.
 - => Ensure unit is on.
- Power supply shortage :-
 - => Refer to specification and check whether sufficient power is being supplied.
 - => Is the breaker on the side of outer part open?
- Check if lamp is turned down.
 - => Check unit in a power outlet that is known to work.
 - If still does not work, contact your local JISICO agent/distributor & have it repaired.

② In the apparatus inclined?
install the machine horizontally all the time.

③ When temperature difference occurs during operation :-

- => Check whether high frequency welding machine, high frequency sewing machine or large capacity SCR controller generating strong high frequency noise is located near the equipment.
- If so, move the equipment to another location.
- => Perform AUTO TUNING (Automatic Tuning Process).

④ When temperature is not raise as accordingly :-

- => Check heater condition for possible physical damage.
- => Perform AUTO TUNING (Automatic Tuning Process).

⑤ In case general failure :-

- => Check unit in a power outlet that is known to work.
- If still does not work, contact your local agent/distributor & have it repaired.

8. After-sales service.

8.1 Free repair

Faults which is responsible for manufacture in normal condition can be repaired with free for 1year from purchase date (only, pressure vessel is zero year), and it is desirous to check following items when requesting A/S.

- . Part and condition generated fault
(It is necessary to explain in detail within limit of possibility)
- . Model name
- . Serial Number
- . Purchase date (year, month, date)

8.2 Onerous repair

In following case, it is required to repair with compensation in spite of guarantee period.

- Fault by user mistake, unsuitable repair or modification
- Fault by negligence for carrying and handling during use
- Fault due to natural disasters such as fire, flood disaster and abnormal voltage
- Fault by using against direction for use.