

OPERATION MANUAL

INCUBATOR

(Model : IB-450M)



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We always try to satisfy the customer.

Jeio Tech, which focuses on the production and marketing of laboratory and scientific instruments, has produced these products with a state-of-the-art technology and new materials.

This operation manual describes the functions of the unit and key points that you have to keep in mind when you operate it. Please be sure to read through this manual for an effective and utmost use of the unit before operate this instrument.

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1.Features and Use

This incubator is to cultivate thermophilic bacteria, colon bacillus and bacteria. And also used for cultivating the tissue of microbes and fauna and flora, activation of sperm and ovum, and confirming Germfree state of sterilized apogeotropism, etc.

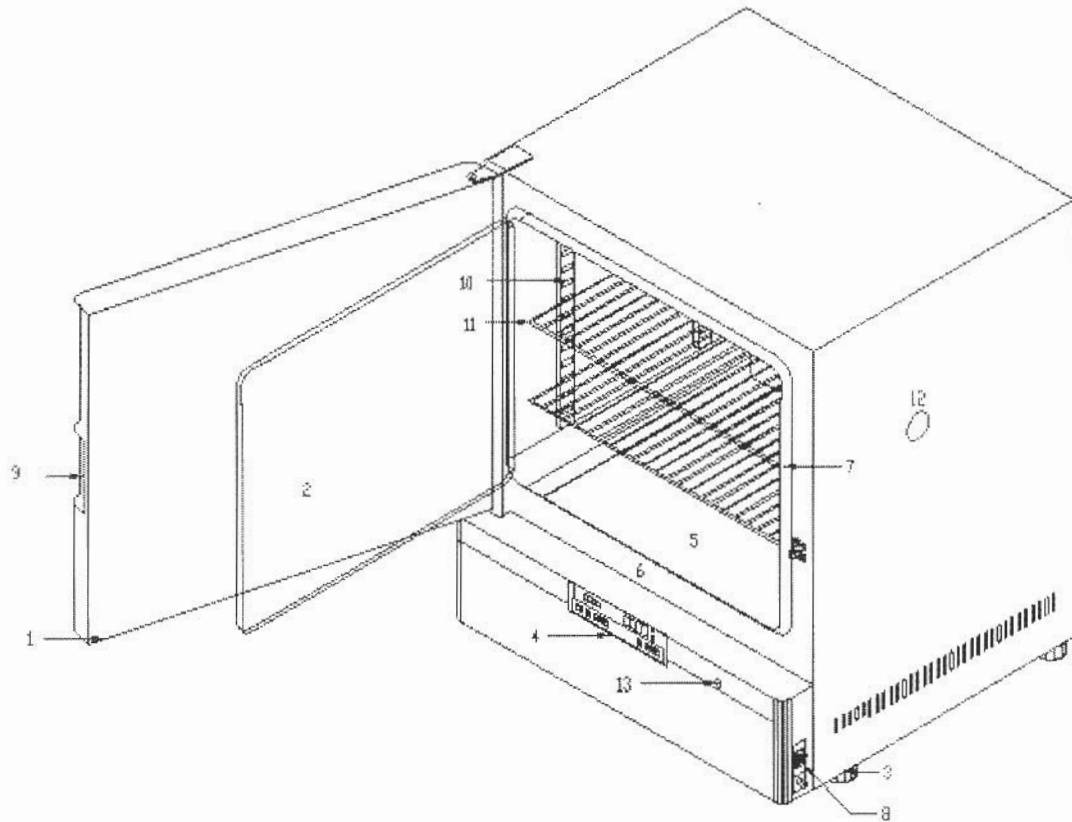
The equipment has various features of safety and convenience for users:

- 1) The equipment is adapted a ground connection to prevent a short circuit and over voltage.
- 2) The equipment is adapted Hydraulic Type Over Temp. Limit and Buzzer in order to protect the unit from overheating.
- 3) You can use the equipment much effective operating by adapting a timer with A-START and A-STOP functions.
- 4) You can see the inside of the chamber through a visible window.
- 5) To minimize the pollution of inner chamber, Air Jacket Type Mechanism that cuts off air ventilation from outside is adapted.
- 6) Chamber is made of Aluminum that has nice temperature distribution and durability.

2. Installation

- 1) Do not expose to direct rays. In case of under the exposed place, provide a blackout curtain.
- 2) Keep the distance more than 15 cm between the unit and wall or barriers for sufficient ventilation.
- 3) Clear the way for the door opening.
- 4) This instrument is requested not to be used where is inclination and vibration place.
- 5) Keep the unit away from high humidity area.

3. Name of the parts



1) Door

Double wall construction in order to prevent heat from conducting keeps the surface of the oven cool.

2) Tempered glass window

Tempered glass window lets you view your samples during drying.

3) The lower ends

easy to balance the oven even in rough surface

4) Control panel

Built-in Digital PID-Controller

5) Bottom plate

Do not put the sample on the bottom plate. Spillage of the sample may cause fluctuation of temperature from irregular inner-air rotation.

6) Heat box

There is a heater beneath the bottom plate

7) Packing

Specially manufactured silicon gasket ensures a tight seal.

8) Main switch & Fuse

9) Door catch

10) Shelf rack

It offers 12 levels of space for samples.

11) Shelves

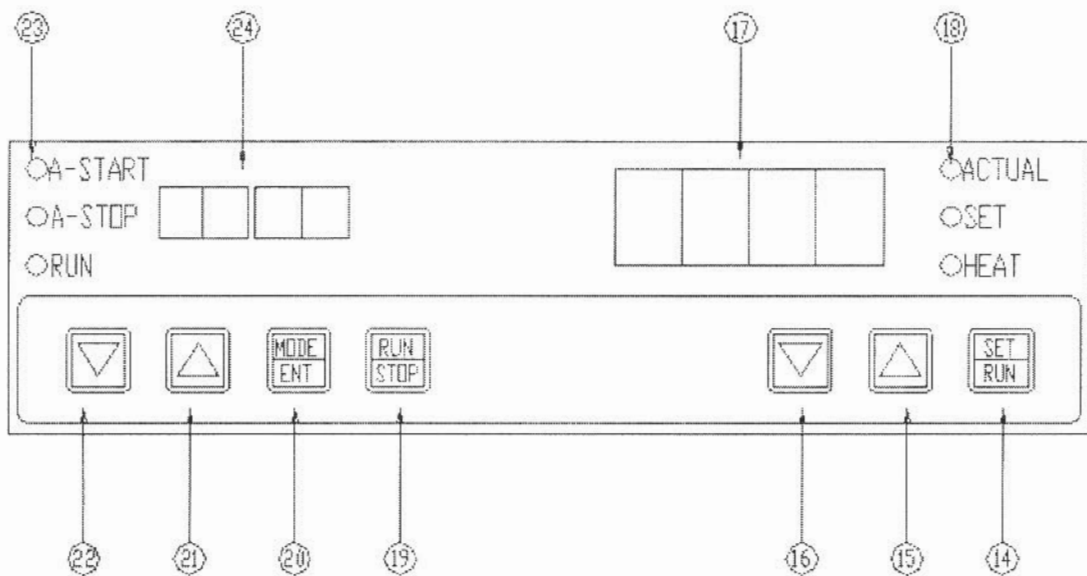
Stainless steel shelf protects shelf itself from corrosion.

12) Ventilation hole

This hole controls the volume of air ventilation in the chamber and enables the user to make an experiment with a cable through this.

13) Over temp. limit

This is a safety device consisted of an independent circuit. When the heater is overheated abnormally over the set temperature, this safety device will cut off the power supply with alarm automatically.



14) SET/RUN Key

This key is for handling proper temperature and operating the unit. For setting up the temperature, press this key, then set LED is going to be on light, and set the temperature using ▲▼ key. After setting up the temperature, press this one more time, then actual LED is on, in order to operate this machine.

15)16) ▲▼ key

This is for increasing or decreasing the setting up temperature.

The temperature is going to be set by 0.1°C by short time push the key, and much more by long time push.

17) Temperature display

It shows set up and current temperature in the chamber.

18) Actual/Set/Heat LED

Blinking of this LED reveals normal operation of each parts.

Heat LED blinking means there is electric current and PID-operation.

19) RUN/STOP Key

This is for choosing or stopping the timer function. Blinking the 'RUN LED' reveals normal operation of this machine, reversely, not. When this key is blinking, it is impossible to set up temperature or time.

20) MODE/ENT Key

This is for choosing the timer function and setting up the time.

21)22) ▲▼ key

This is for changing the timer function and setting up the time.

23) A-START/A-STOP/RUN LED

This LED shows the processing of timer function, 'A-START LED' blinking reveals FIG.1 and 'A-STOP LED' reveals FIG.2. 'RUN LED' blinking reveals in progress of timer function.

24) Time display

Time can be set from 1 minute to 99 hours and 59 minutes.

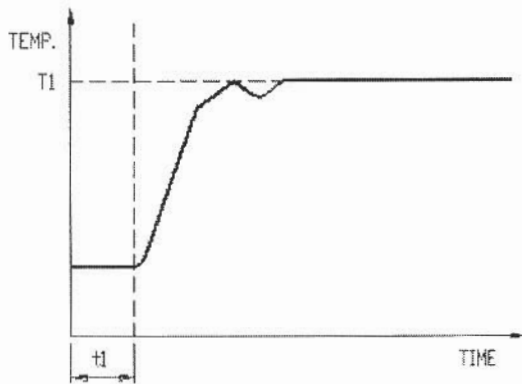


FIG.1 A-START FUNCTION

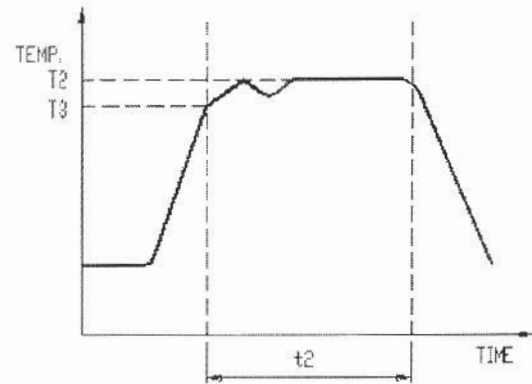


FIG.2 A-STOP FUNCTION

After t_1 period, heating begins.
BUZZER rings for 2 seconds.
(T_1 =set up time)

After heating, temperature reaches
to CONTROL RANGE (at= T_3) with
BUZZER ringing (T_2 =set up time).
This sound reveals the starting of
AUTO STOP FUNCTION. After t_2
period, heating is stopped with
second BUZZER ringing automatically.

4. Cautions

- 1) Only used in 115V, 60Hz. Please check on the regular voltage before power on. Don't use this instrument where a lot of current is required. It is possible to make troubles.
- 2) Do not put in an explosive, combustible sample such as Alcohol and Benzene inside of the chamber
- 3) Keep away from flammable materiel.
- 4) When clean the unit, do not pour water to external body directly, specially, to the control panel.
- 5) Don't use acid solution, benzene, soap water, detergent, hot water and sharp material to clean the unit. It may cause color changing or damaging the surface of unit and of rubber or plastic. Especially, never use volatile

materials.

- 6) Remove the power plug from the consent grabbing the plug.
- 7) Keep off wet handling.
- 8) In case of not using the unit for a long time, plug out the power cord from the consent.

5. Operation

1) Confirm the parts

(1) operation manual	1
(2) shelf	2
(3) shelf rack	4
(4) fuse	3

2) Switch off all buttons before plug in(115VAC, 60Hz).

3) Switch main power on.

4) In order to protect the sample from overheating, please set up the over temp. limit temperature higher than experimental set up temperature by 10%

5) Before use timer function, understand “ 3. Name of the parts” part first.

6. Controller Operation

1) In case of normal use

- ① Press SET/RUN key first and set up the setup temperature with ▲▼ key.
- ② Press SET/RUN key to get ACTUAL mode. Then temperature is going to

be increased with lightening of HEAT LED.

2) When using timer function

- ① After finishing temperature set up, press MODE/ENT key. And choose desired function with ▲▼ key.
- ② With confirming the LED that you chosen is on light, go to the time set up mode with MODE/ENTER key.
- ③ Check on the time LED is blinking, and set up the time with ▲▼ key.
- ④ Check on the setup time (hour) is correct, and set up the minute value with MODE/ENTER key.
- ⑤ Check on the time LED is blinking, and set up the minute with ▲▼ key.
- ⑥ Check on the setup time (minute) is correct, and push MODE/ENTER key in order to finish time setting.
- ⑦ After that, push RUN/STOP key. On light RUN LED reveals that the unit begins to operate timer function.
- ⑧ It is not able to operate the keys except for RUN/STOP key while the RUN LED is on light. So, if you want to amend the time or temperature setup value, you' d better push the RUN/STOP key to stop the RUN LED blinking.
- ⑨ If you want to quit from unit operating, push RUN/STOP key.

3) When using Offset function

: This is to correct the temperature that is different between the bath inside and the sensor itself.

Let' s assume that, for example, current temperature that comes from the chamber displays 40°C and the temperature that is displayed in display is 41°C.

- ① In ACT mode, push ▼ key for 10 seconds in order to change the ACT mode to OFFSET mode that displays “ off” on the left display.
 - ② Push SET/RUN key, then you can see “ offs” on left display and “ 0.0” (offset value) on right display.
 - ③ Push ▼ key to make “ -1” which means the same value in 40°C, and push SET/RUN key to quit from OFFSET mode(offset range is - 5.0 ~ +5.0 °C).
 - ④ After quitting from OFFSET mode, set up the setup value 40°C again.
- * Note: Because offset value is different from every setup value, you’ d better correct setup value in every time.

7. Maintenance and its cleaning

1) Cleaning inside of the chamber

- Remove the power plug from the consent first.
- Take out shelves inside of the chamber.
- Clean up the body using a soft cloth or sponge damped with neutral detergent.
- Clean up the body using a soft cloth or sponge damped with clean water.
- Wipe with dry cloth.

2) Cleaning outside of the body

- Clean up the body using a soft cloth or sponge damped with neutral detergent.
- Wipe with dry cloth.

※ Do not use organic solvents. (Especially, control panel and door handle part)

3) Cleaning the electric parts

– Clean with dry cloth only.

4) In case of not using the unit for a long time

– Remove the power plug from the consent first.

– Wipe with soft cloth.

– Keep the unit with packaging.

8. Causes of malfunction and its repairs

(1) When the unit stops running

- Check on the power supply plug is connected.
- Check on the main power switch is on.
- Check on the fuse on the rear panel of the machine
- Check on there is a power failure.
- Please call for service.

(2) When the temperature doesn't increased

- Check on the setting temperature.

- Check on the set Over Temp. Limit is proper.
- Please call for service.

(3) When the temperature is out of control

- Check on the setting temperature and over temperature protection is set up properly or not.
- Check on the power voltage is proper.
- Please call for service after checking this manual.

(4) When the controller doesn't work

- Check on there is other machine that needs large power.
- Please call for service.

(5) When the fan doesn't work

- Check on the fan is caught in the main body.
- Check on the fan itself.
- Please call for service.

9. After services

1) When there are malfunctions caused in producing in spite of user's normal operation, repairs are provided free of charge for one year from purchasing.

Please give us the information as below;

- Malfunctioning parts and status (if possible, please explain the state of problems in details.)
- Type of model
- Serial Number
- Purchasing day/month/year

2) Malfunctions are to be fixed with charge in these cases notwithstanding the warranty period:

- Malfunction due to the user's mistake, improper repairs, or remodeling the part or whole unit.
- Malfunction due to the user's improper handling or carrying the unit after purchasing.
- Malfunction due to disasters such as fire, flood, or abnormal power supply.
- Malfunction due to user's not following the operation manual.

3) Contact our company or dealer for more information or questions.

10. SPECIFICATIONS

Spec.	Model	IB-450M	IB-600M
Type		Universal Incubator	
Convection Type		Air-Jacket Type Heat & Blowing	
Temp.	Range	Amb. +5°C ~ +60°C	
	Accuracy	± 0.2°C at 40°C	
	Uniformity	± 1.0°C at 40°C	
	Heat up Time	50 min up to 37°C	
	Controller	Digital PID – Auto Tuning (Offset function)	
Size	Internal(W× D× H, mm)	450 × 480 × 450	600 × 530 × 500
	External(W× D× H, mm)	580 × 600 × 826	730 × 650 × 866
Safety	Over Temp.	Hydraulic Type	
	Electrical	Over Current Glass Fuse	
Material	Internal	Anodized Aluminium Plate 1.0t	
	External	SS #41 0.8t, Double Paint & Baked spcc.	
	Shelves	SS #304 Φ 5 x Φ 3 Wire, Electro-Polished	
	Heater	Incoloy Fin Heater	
	Insulation	Inflammable Polystyrene 25mm	
	Door Packing	High Temp. Grade Foamed Silicone Rubber	
	Glass door	Tempered Safety Glass 5mm	
Electric Requirements		115VAC, 60Hz	
Power Consumption		2.5A max.	3.0A max.
Weight(Net/kg)		43.6	54.5