Version : 2021 Rev.2

AUTOCLAVE

SH-AC-60M/80M/100M/150M/300M

TABLE OF CONTENTS

Keep this manual on-hand so it can be used by all operators of the unit.
Use the unit only in the way described in this manual.
Failure to follow the instruction in this manual may cause wrong operation.

1. General description

Thank you for purchasing our product. We know that in today's competitive marketplace, customers have many choices when purchasing laboratory equipment.
We appreciate your choosing our quality product. We stand behind our products and want to let you know we are here if you need us.

Before you use the unit, read this entire manual carefully to understand how to install, operate and maintain the unit in a safe manner.
Your satisfaction with the unit will be maximized as you read this manual thoroughly.

Our capable products will satisfy you by the best performance with easy operation.

2. Graphic symbols

BE SURE THAT YOU UNDERSTAND ALL OF THESE SYMBOLS
BEFORE OPERATING THE UNIT.

Important operating and / or maintenance instruction. Read the accompanying text carefully.

This symbol indicates items and procedures that are STRICTY PROHIBITED with regards to the unit.

Potential electrical hazards.

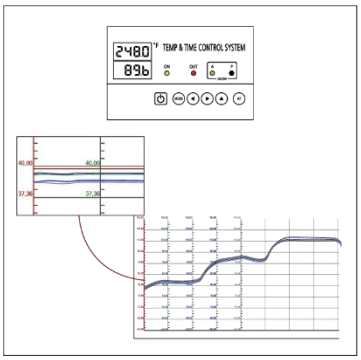
Explosive.

No disassemble.

Flammable.

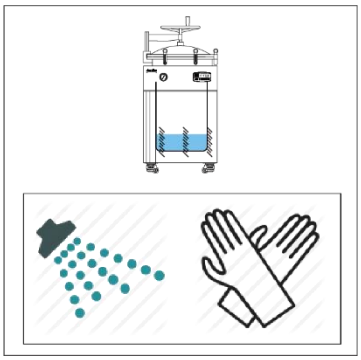
Hot surface or steam.

3. Key feature

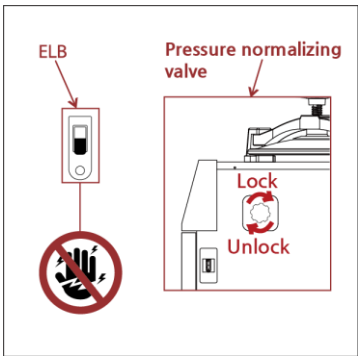


- Digital display of temp and time
- Multi key-in (100Ω(DIN Pt100Ω), KPt100Ω(JPt100Ω), K(CA))
- Precise temperature control
- Alarm when timer ends

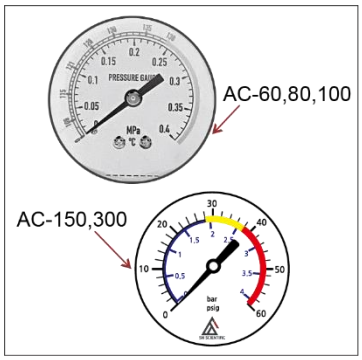
- Auto back up



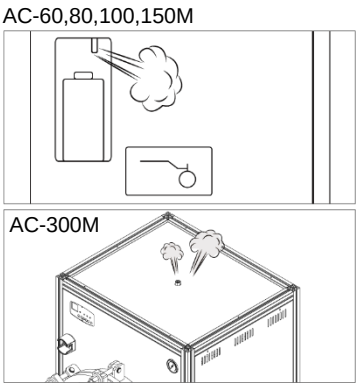
- Perfect sterilization



- Over-current protection function with ELB breaker
- Manually inner pressure release(AC-150M,300M Except)
- Pressure normalizing valve in emergency case

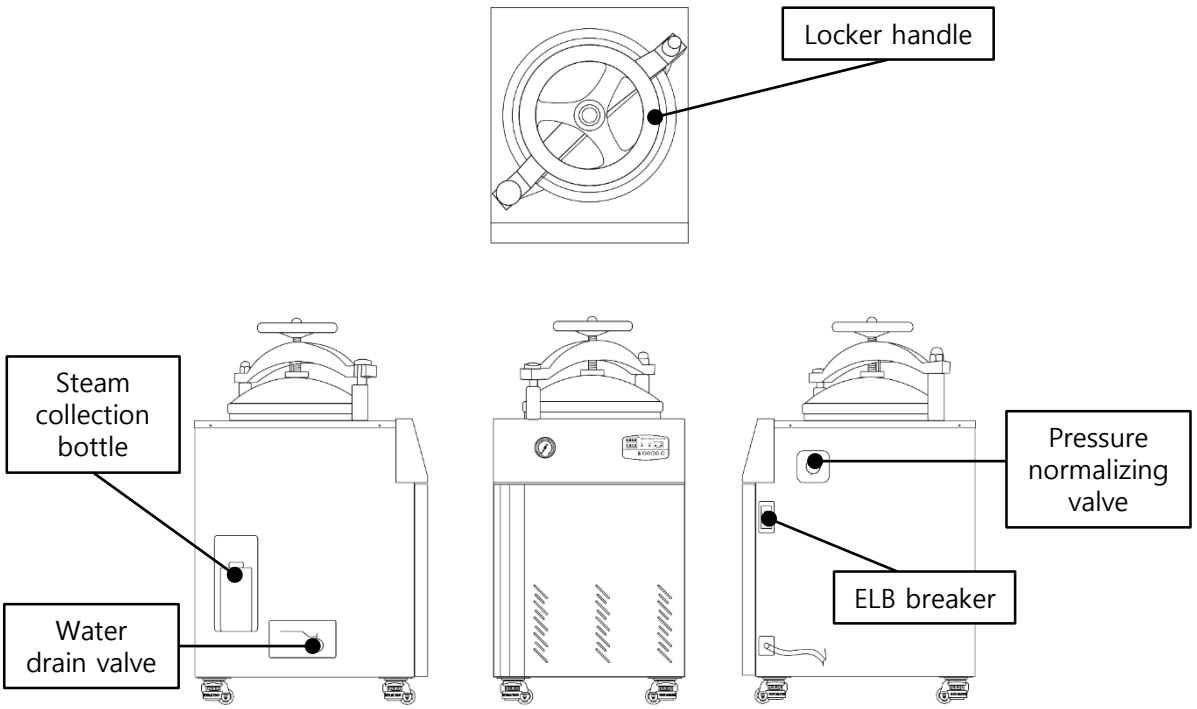


- Optimized pressure gauge for autoclave

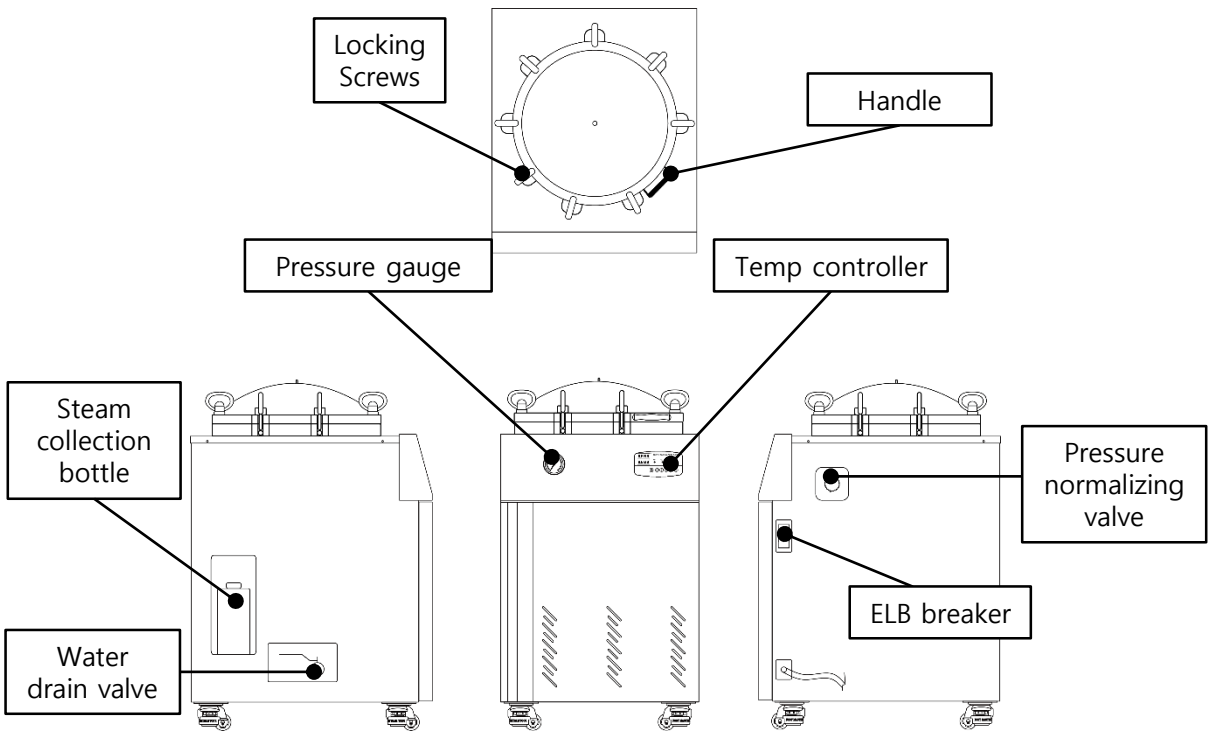


- Automatic over-pressure protection function

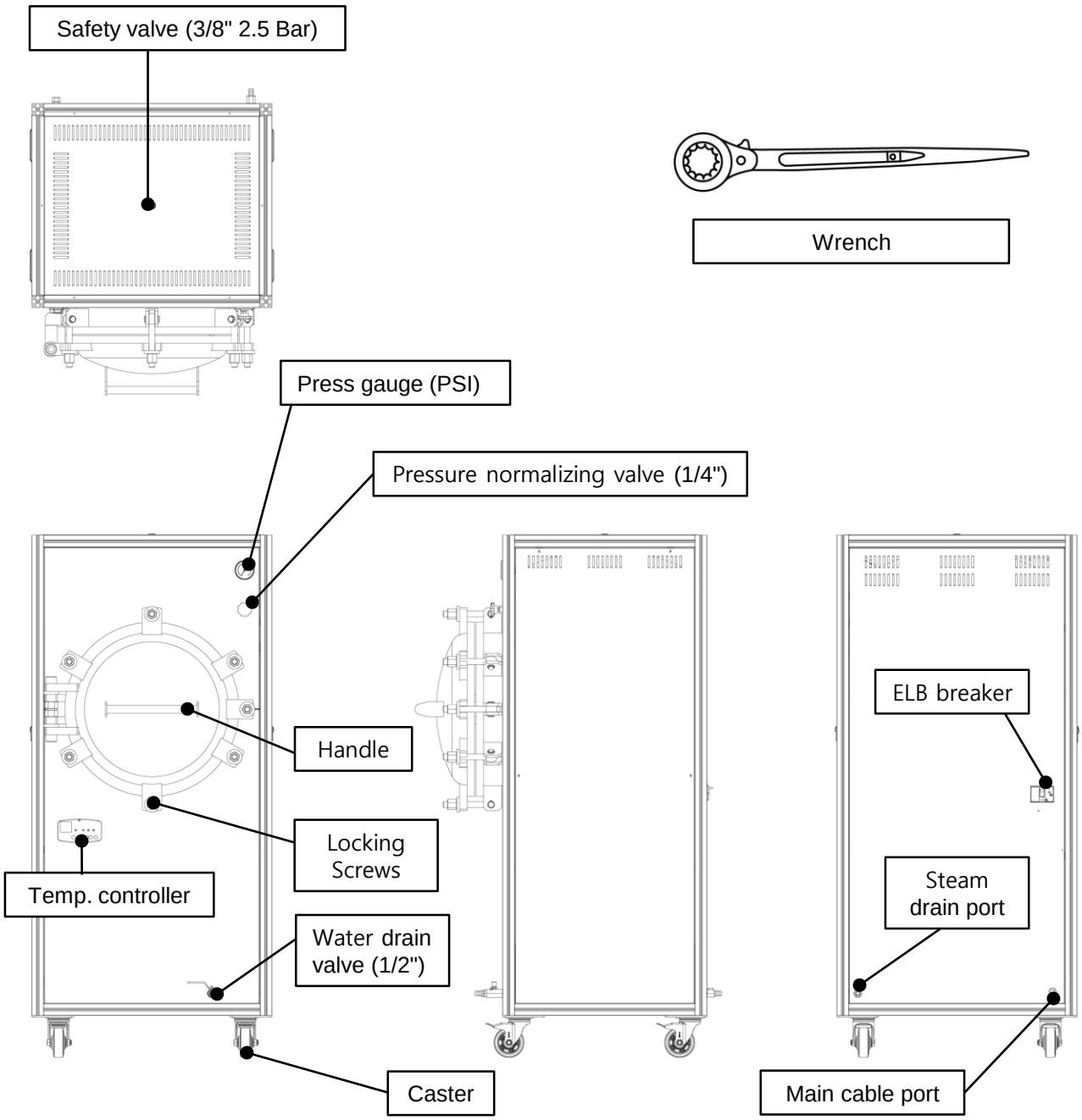
4. The outward



<AC-60M/80M/100M>

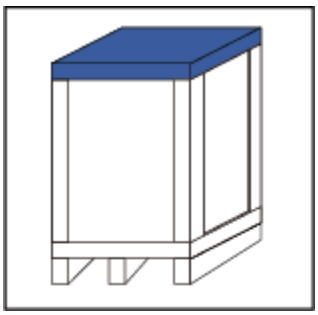


<AC-150M>

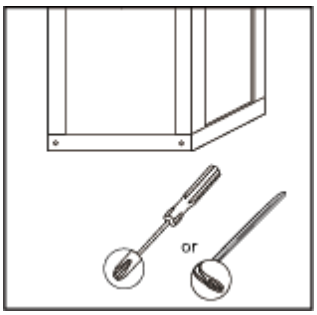

Safety valve (3/8" 2.5 Bar)
Wrench
Press gauge (PSI)
Pressure normalizing valve (1/4")
Handle
Locking Screws
Temp. controller
Water drain valve (1/2")
Caster
ELB breaker
Steam drain port
Main cable port

<AC-300M>

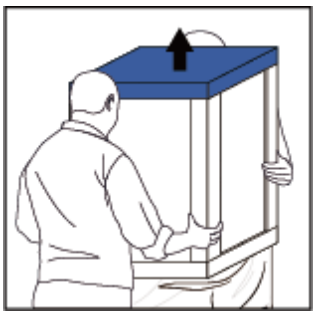
5. Installation



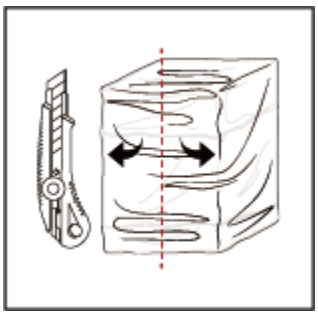
① Once the product is delivered, place the package on a flat location.



② Unscrew the bottom of the box.

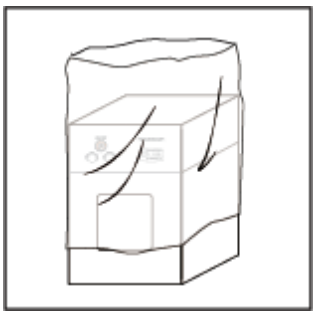


③ Lift the box as shown in the picture.



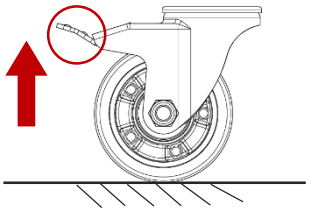
④ Unwrap the bag.

⑤ Place the equipment on your desired location.

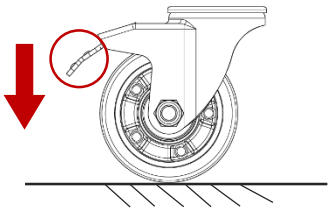


⑥ Lift the remaining plastic up.

AC-300M

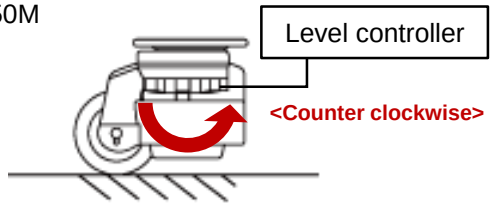


<Unlock position>

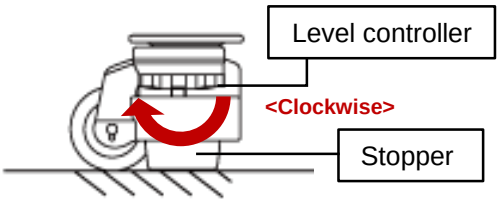


<Lock position>

AC-60/80/100/150M



<Unlock position>
- When moving equipment

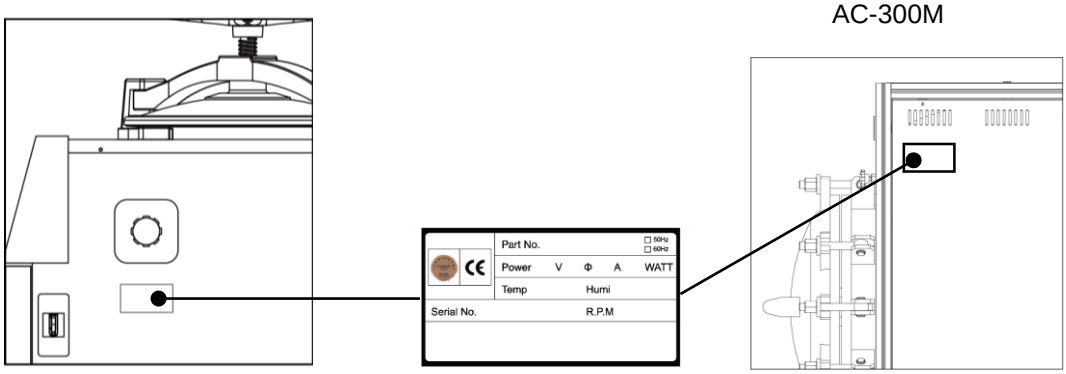


<Lock position>
- When stopping moving equipment or installing

When installing equipment, fix the stopper to the floor by turning the level controller clockwise or counterclockwise.

AC-60/80/100/150M

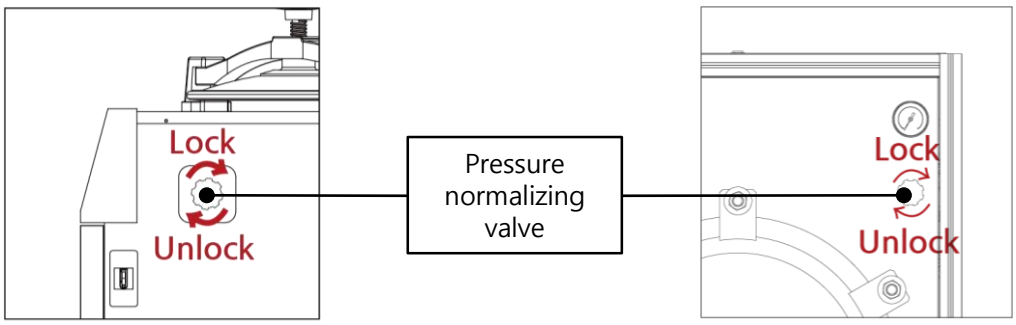
AC-300M



Serial label shows the electric power specification of the unit.
Connect power and turn on the main switch (E.L.B)

AC-60/80/100/150M

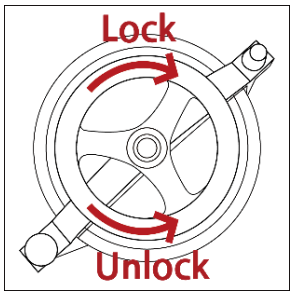
AC-300M



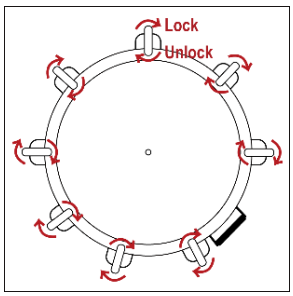
Make sure if the manual normalizing valve is on 'close' position before use.
It will cause pressure failure if the valve is not closed.

YOU MUST USE DISTILLED WATER (OR DEIONIZED WATER) IN ANY CASE. NO TAP WATER WHICH WILL CAUSE TROUBLE OF CORROSION AND ILL-FUNCTION ON HEATING ELEMENTS AND SENSORS, WHICH IS OUT OF OUR WARRANTY RESPONSIBILITY.

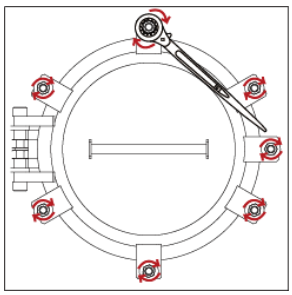
※ AC-60/80/100M

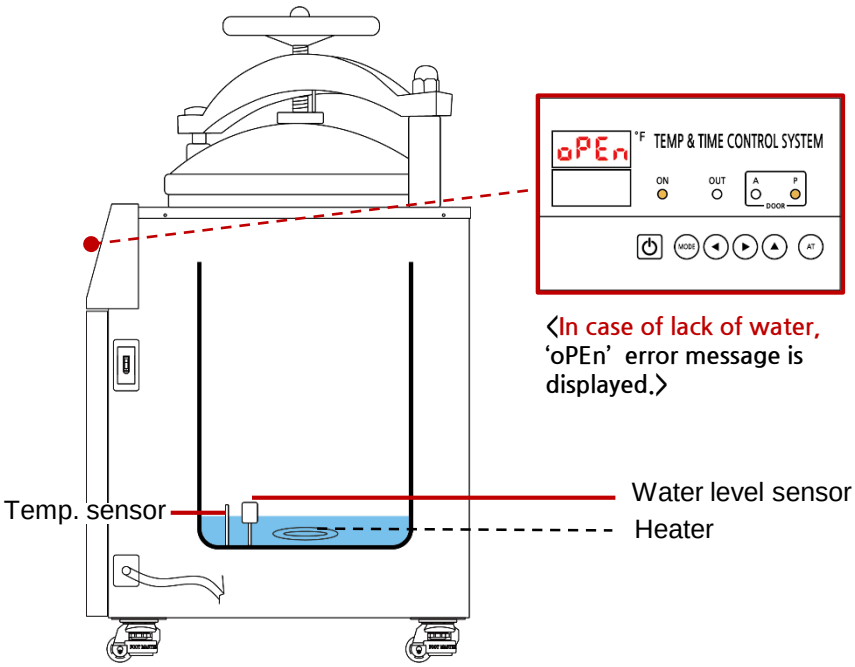


AC-150M



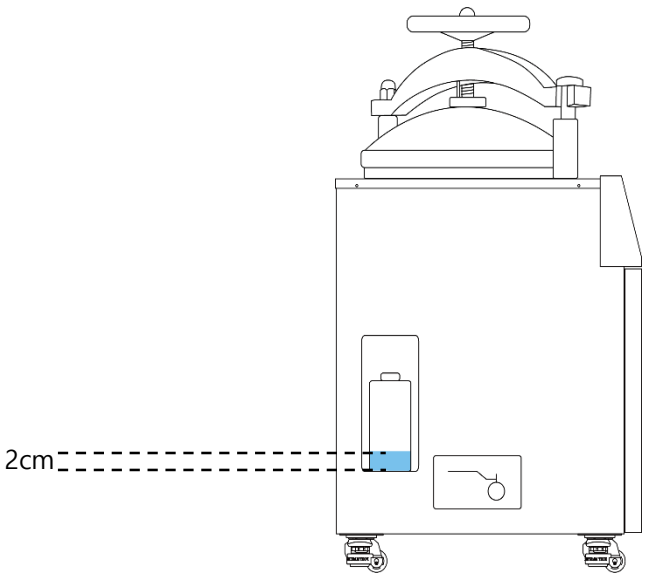
AC-300M





〈In case of lack of water, 'oPEn' error message is displayed.〉

Fill water into the chamber as fully as the heater and level sensor are completely submerged.
Make sure the heater and level sensor are completely submerged in the water before operation every time.

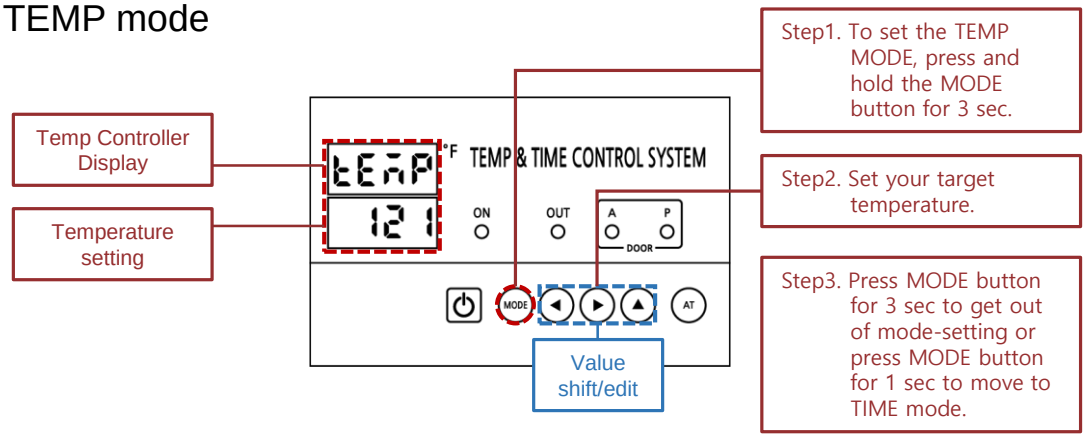


<AC-60M/80M/100M/150M>

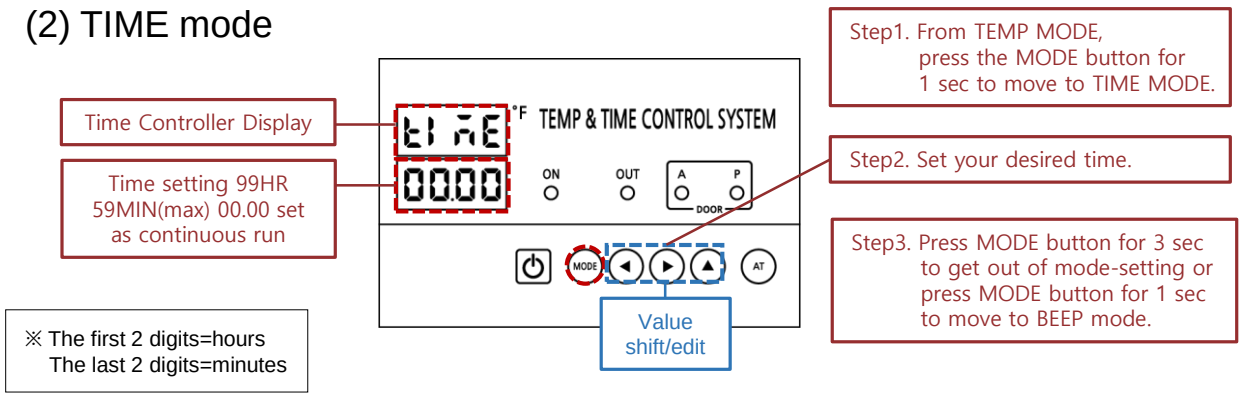
Fill the water inside the steam bottle around 2cm.

6. SETTING AND OPERATION

(1) TEMP mode



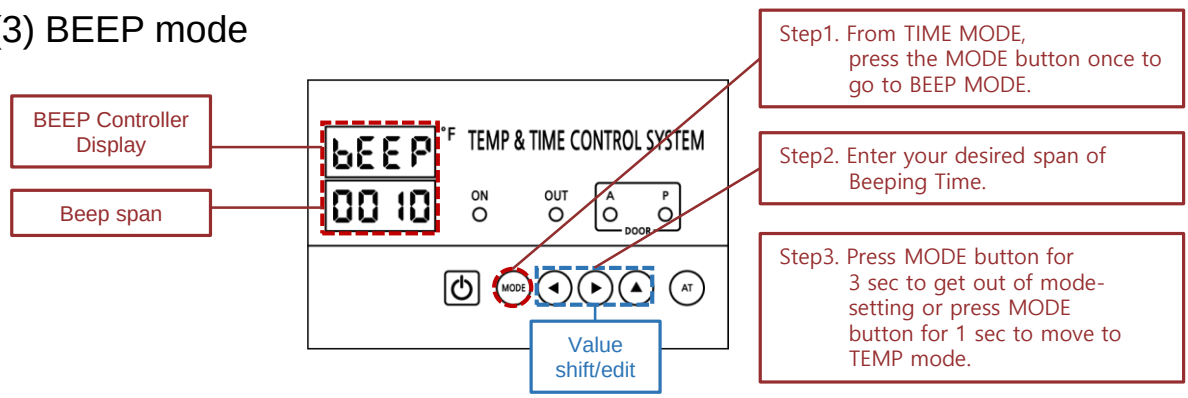
(2) TIME mode



If you want a minute-second or day-hour time combination instead, feel free to contact your supplier.

※Be aware that 00.00 means infinite value.
The unit will continue to run until the user manually turns it off.

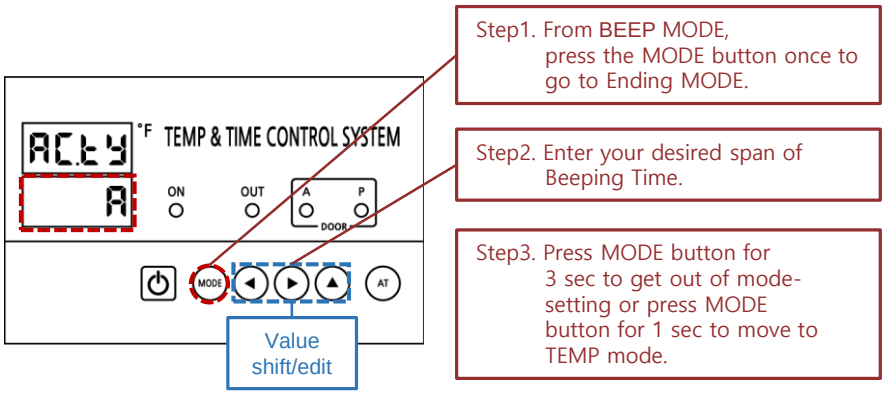
(3) BEEP mode



The span of time set under beep mode is the duration of the beeping once the set operating time has been finished.

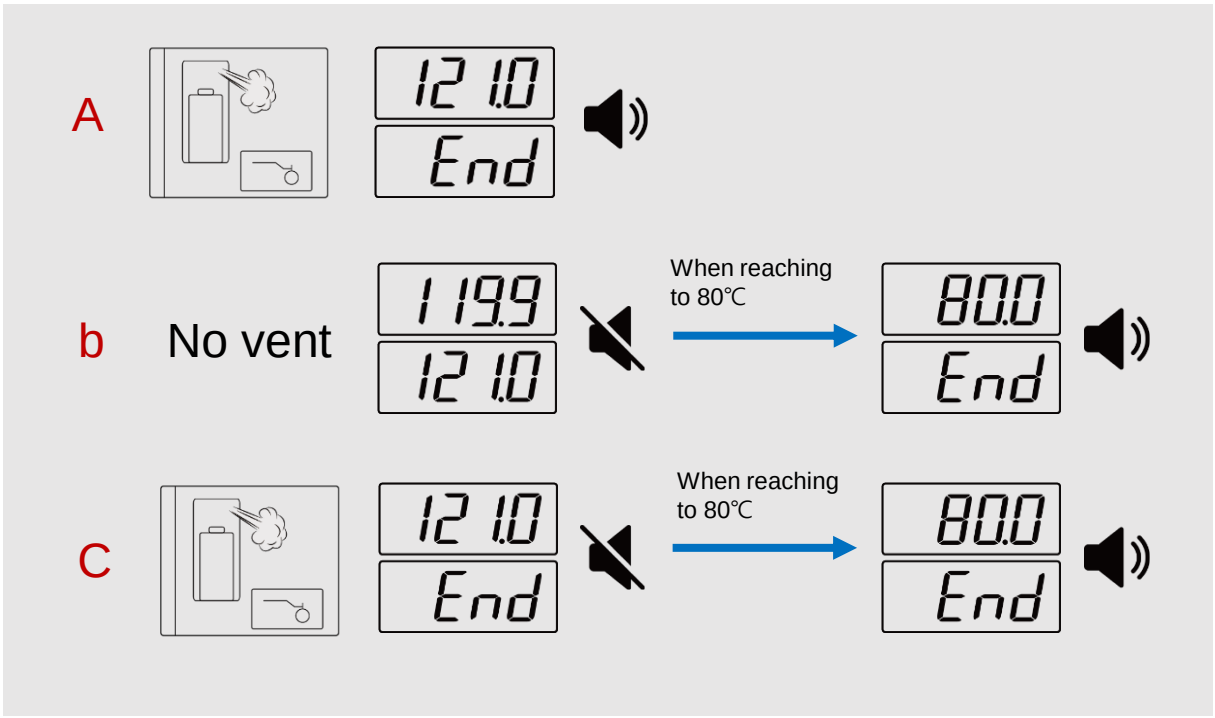
1 buzzer sound/sec.
The BEEP timer will only operate once TIME mode is set.

(4) ENDING mode

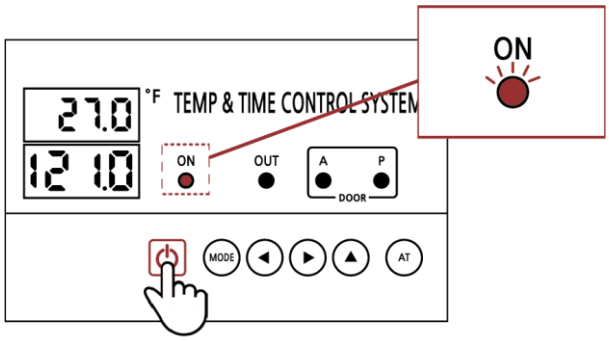


※ Ending Mode (A, B, C)

Steam | Display | Buzzer



(5) Start the unit



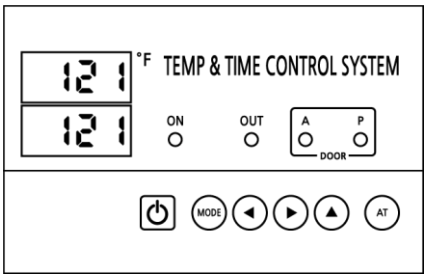
Press ⏻ for 3 sec and the unit will start running with lamp ON.

Make sure that you should press ⏻ always to run the unit.

Lamp A and P's status is nothing to do with this product so you do not need to pay attention for A/P Lamp status in this product.

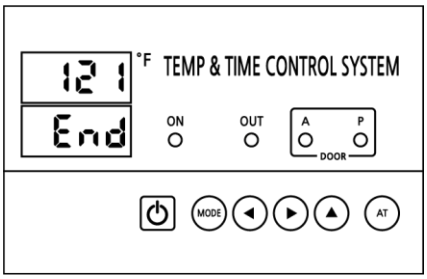
(6) Stop the unit

<In case operation time is not set>



• Press ⏻ button for 3 seconds. Then ON lamp is off and operation is end.

<In case operation time is set>



• Operation is automatically end after the set time is over.
• Press ⏻ button to return to initial screen.

After end of operation, inner steam is automatically exhausted to Steam collection bottle and inner pressure is releasing.

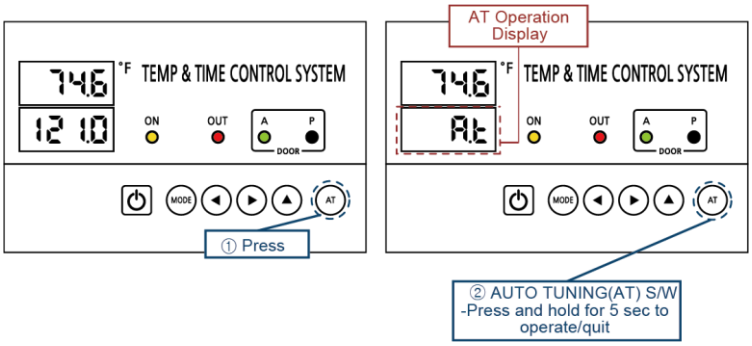
Open the door after inner pressure is completely released.
When opening the door, pay attention to hot steam.

(7) Auto Turning(AT)

AT is recommended under 2 cases.

case1. When the change of current temp is fluctuating more than ±0.1℃.
case2. When the unit can not reach at the set temp.

You can enter / quit AT mode by pressing AT button for 5 sec.



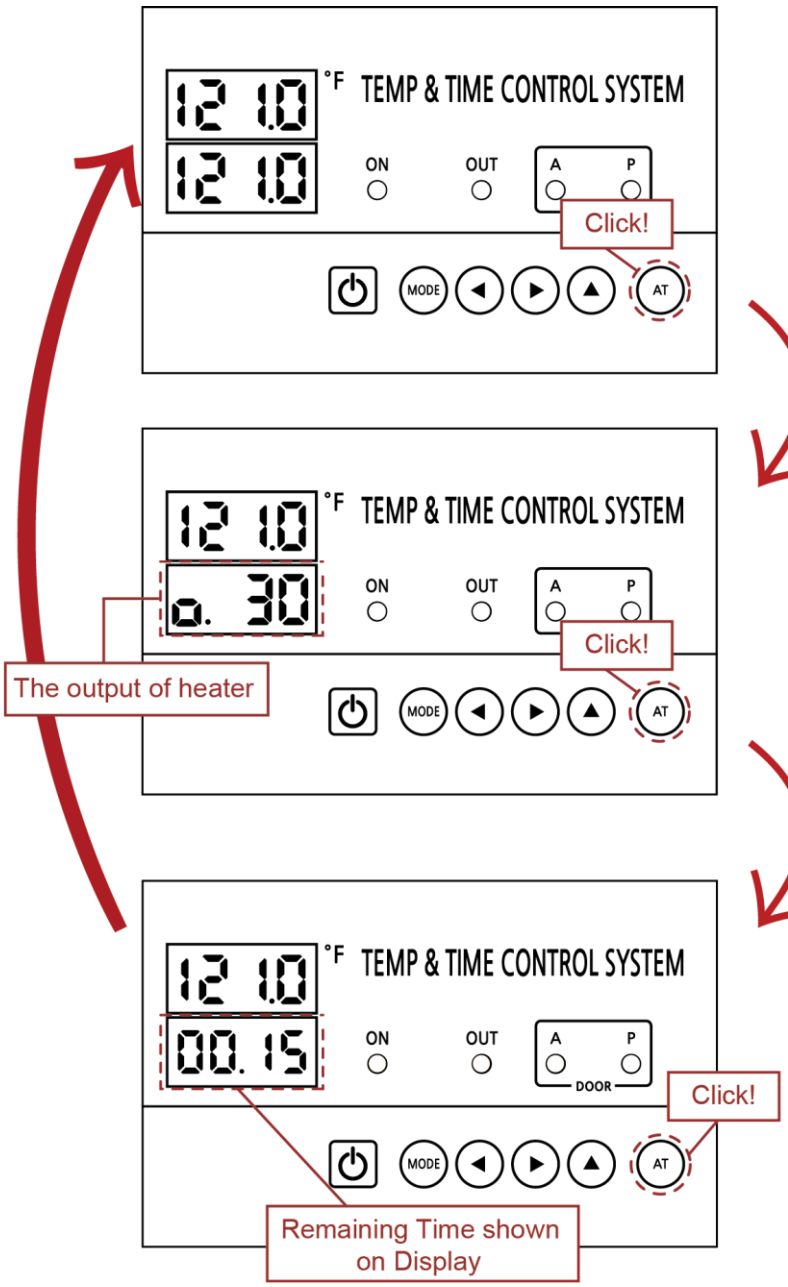
AT will be finished automatically when it is done.

(8) Checking the remaining operation time and the output of heater

➡ You can check the output of heater by clicking "AT" button for 1 sec.

➡ You can check the remaining operating time by clicking "AT" button one more time.

➡ You can return to the original display by clicking "AT" button one more time.

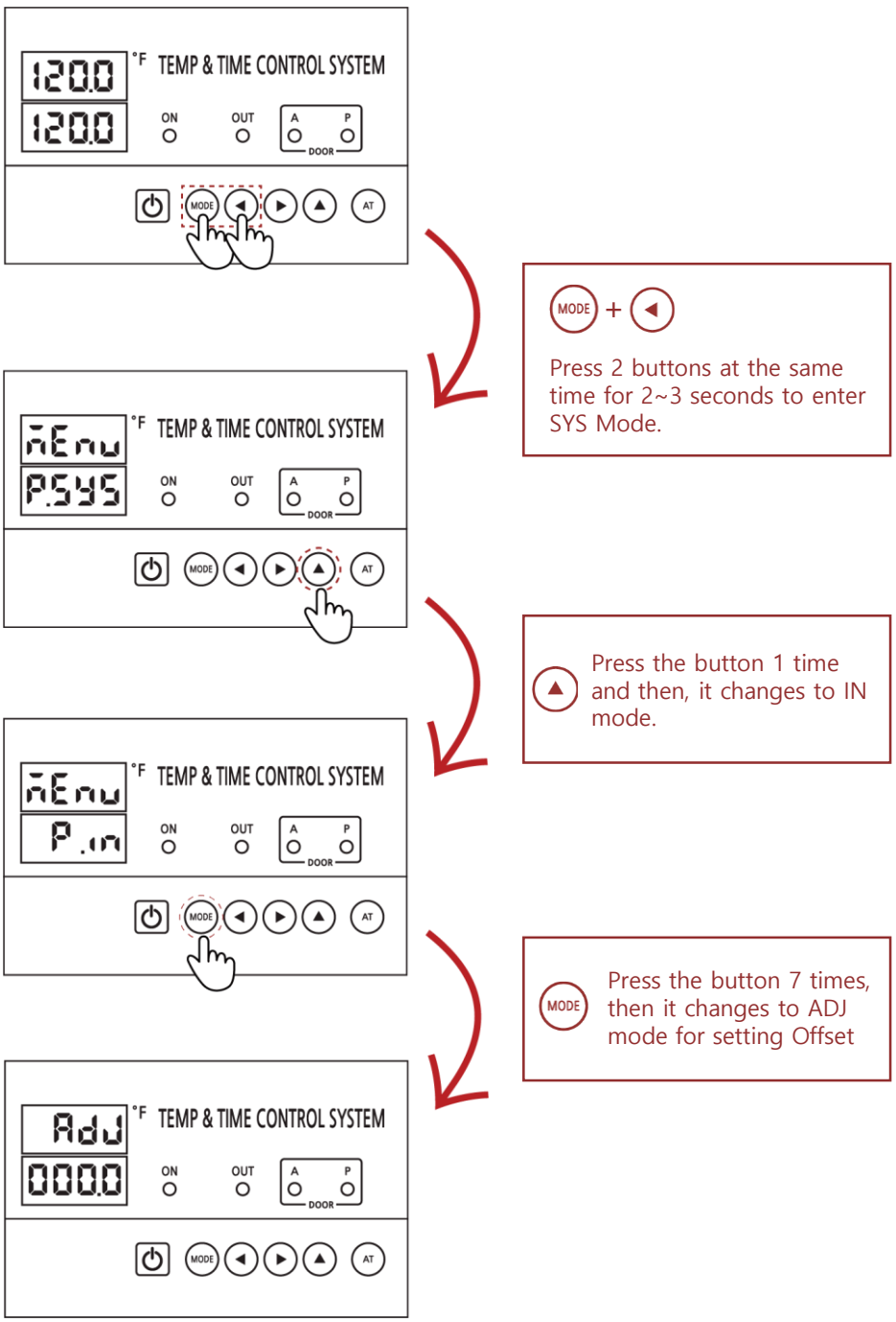


* 0.100=100% Output of heater
0.60=60% Output of heater
0.30=30% Output of heater

7. Temperature Offset setting

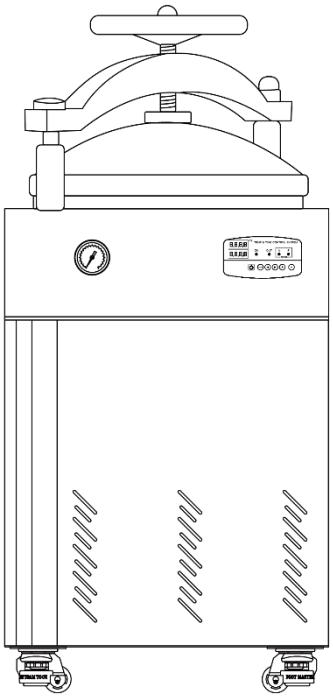
This setting is necessary to keep the optimal temperature uniformity.
Please follow the Offset setting process

(1) Offset setting mode



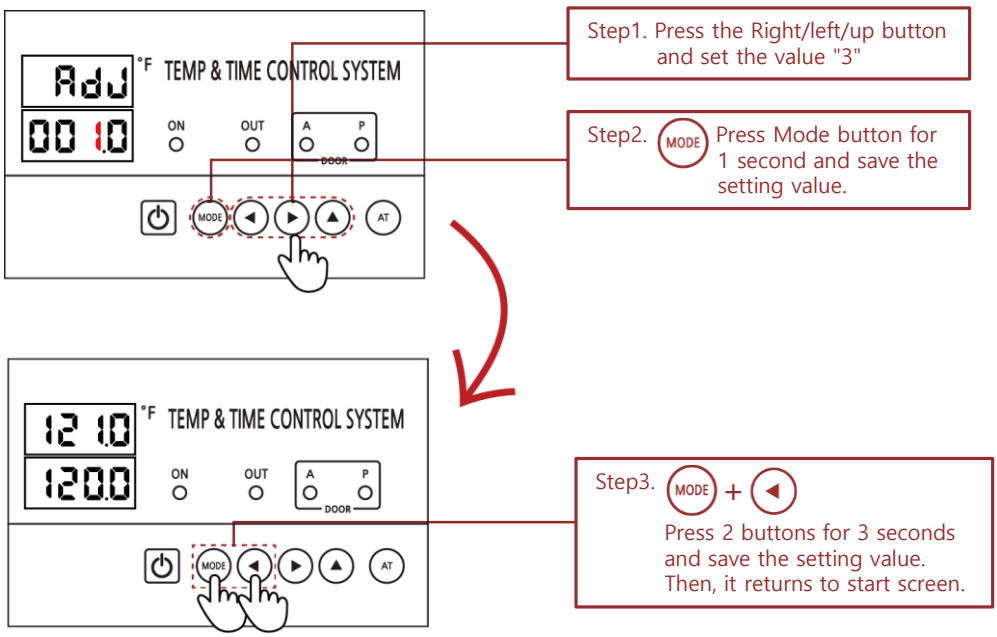
(2) Example for Temperature offset setting

ex 1) To raise 1 ℃

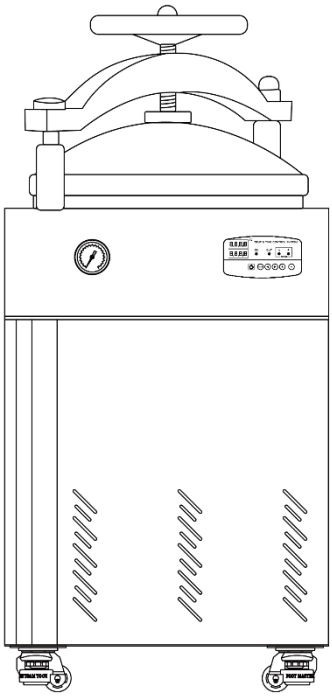


offset : +1℃
(Average Temp.)

< SH Scientific's equipment >

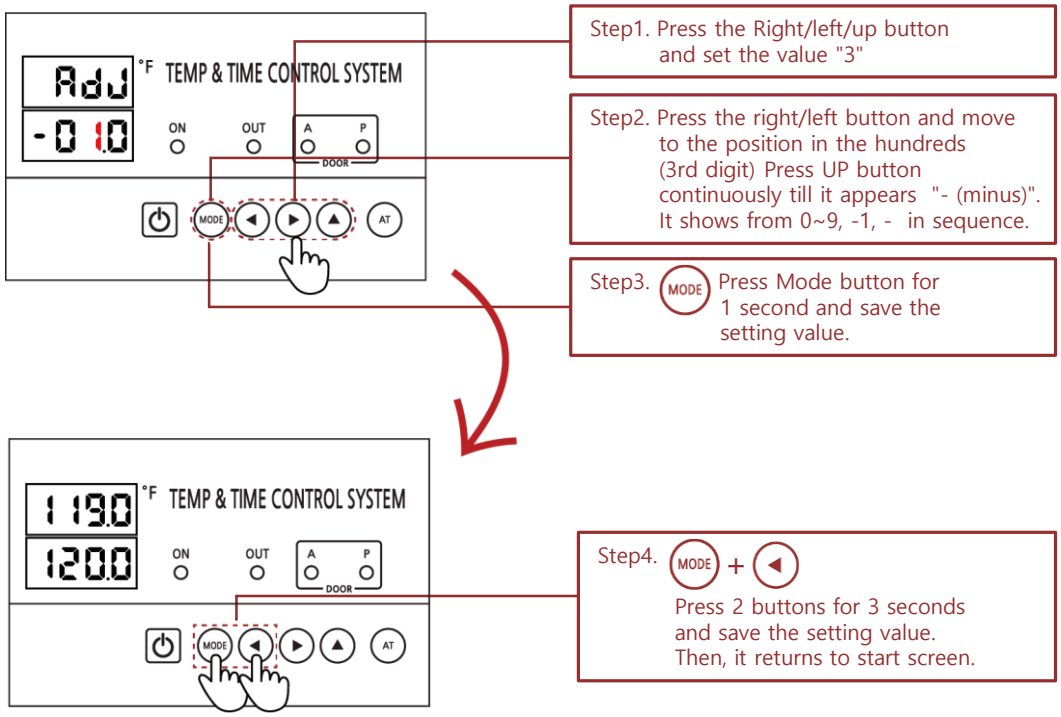


ex 2) To decrease 1

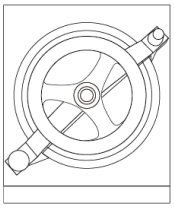


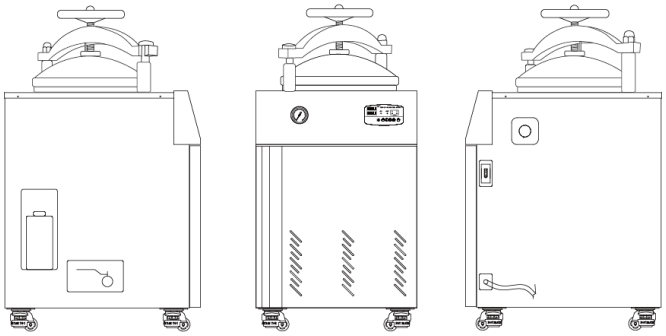
offset : -1℃
(Average Temp.)

< SH Scientific's equipment >



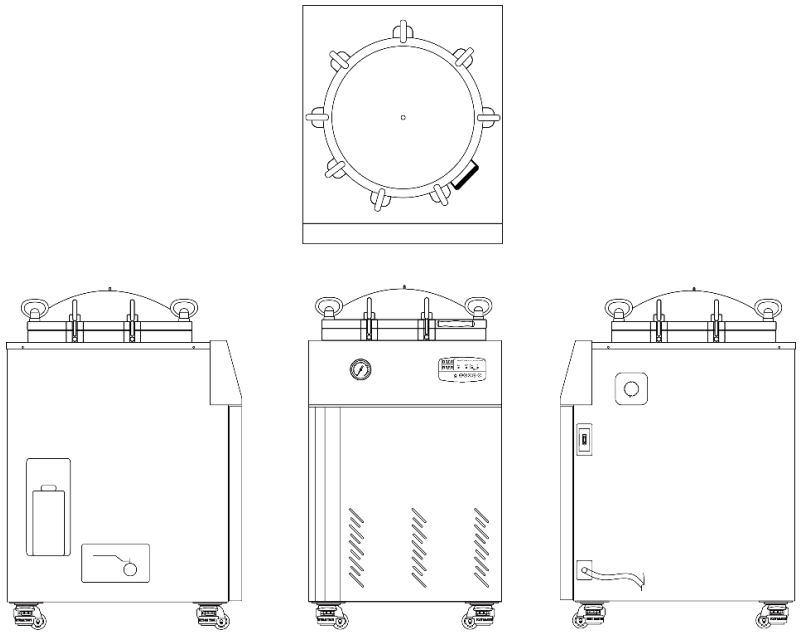
8. Specifications (SH-AC-60M/80M/100M)





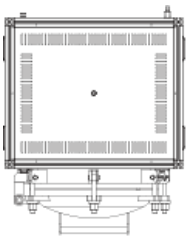
Model	SH-AC-60M	SH-AC-80M	SH-AC-100M
Temp Range	Max 130℃(266℉)		
Temp & Pressure *It may vary depending on the surrounding environment.	121℃(249.8℉) / 20psig (0.14MPa)		
	125℃(257℉) / 24psig (0.16MPa)		
	130℃(266℉) / 30psig (0.2MPa)		
Temp Controller	Microprocessor Digital PID Controller		
Sterling Time	00:00 to 99:59(HH:MM) *Auto alert when the set time is done		
Pressure Gauge	Mechanical type 0 to 0.4 MPa		
Sensor	PT-100		
Capa	60 L	80 L	100 L
Dimension Internal (W×D×H)	344Φx650Hmm	400Φx650Hmm	440Φx650H(mm)
	13.54Φx25.59H”	15.75Φx25.59H”	17.32Φx25.59H”
Dimension External (W×D×H)	550x680x1090mm	600x730x1150mm	600x780x1183(mm)
	21.65x26.77x42.91”	23.62x28.74x5.28”	23.62x30.71x46.58”
Net weight	110 Kg	120 Kg	140 Kg
Material Internal	Stainless Steel		
Material External	Steel Plate with Powder Heating Coated		
Heater	3 KW		5 KW
Electrical Requirements 120V, 50/60/Hz, 1Φ	25.0 A		41.7 A
Cat. No.	AC60M120	AC80M120	AC100M120
Electrical Requirements 230V, 50/60/Hz, 1Φ	13.0 A		22.7 A
Cat. No.	AC60M230	AC80M230	AC100M230

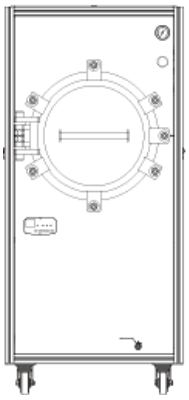
8. Specifications (SH-AC-150M)

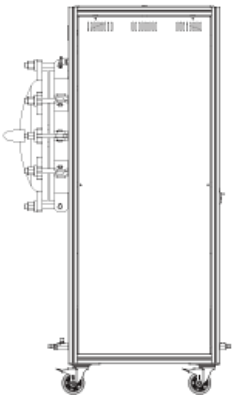


Model	SH-AC-150M
Temp Range	Max 130℃(266℉)
Temp & Pressure *It may vary depending on the surrounding environment.	121℃(249.8℉) / 20psig (0.14MPa)
	125℃(257℉) / 24psig (0.16MPa)
	130℃(266℉) / 30psig (0.2MPa)
Temp Controller	Microprocessor Digital PID Controller
Sterling Time	00:00 to 99:59(HH:MM) *Auto alert when the set time is done
Pressure Gauge	Mechanical type 0 to 60psig(4 bar)
Sensor	PT-100
Capa	150 L
Dimension Internal (W×D×H)	514Øx748.43Hmm
	20.34x29.47"
Dimension External (W×D×H)	608x750x1078mm
	23.94x29.53x42.44"
Net weight	111 kg
Material Internal	Stainless Steel
Material External	Steel Plate with Powder Heating Coated
Heater	5.8KW
Electrical Requirements 220V, 50/60Hz, 1Ø	26.4A

8. Specifications (SH-AC-300M)

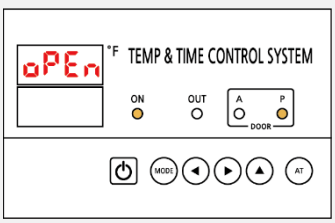






Model	SH-AC-300M
Temp Range	Max 130℃(266℉)
Temp & Pressure *It may vary depending on the surrounding environment.	121℃(249.8℉) / 20psig (0.14MPa)
	125℃(257℉) / 24psig (0.16MPa)
	130℃(266℉) / 30psig (0.2MPa)
Temp controller	Microprocessor Digital PID Controller
Timer range	00.00 to 99HR 59MIN (MIN SEC) selectable
Pressure Gauge	Mechanical type 0 ~ 60 psig / 0 ~ 4 bar
Sensor	PT-100
Capa	300 L
Dimension Internal (DxH)	637Øx952Hmm 25.07x37.48"
Dimension External (W×D×H)	812x972x1741mm 31.96x38.26x68.54"
Material Internal	Stainless Steel
Material External	Aluminum frame & Stainless Steel
Heater	Heater 3.5Kwx3 = Total 10.5Kw
Electrical Requirements 220V ,50/60Hz, 3Φ	27.6 A

9. Troubleshooting

Symptom	Proposed solution
Unit does not work	Check if the power plug is correctly connected.
Temperature does not rise	Run the machine by pressing ⏻ for 3 sec.
	Execute AT(Auto Tuning) by pressing AT for 5 sec.
	Check OVER TEMP set value.
Pressure does not rise	Press ⏻ for 3 sec.
	Execute AT(Auto Tuning) by pressing AT for 5 sec.
	Check OVER TEMP set value.
	Check if Pressure Normalizing Valve is closed well.
	Check the lid of units is closed well.
Operating Temp. fluctuates	Execute AT(Auto Tuning) by pressing AT for 5 sec.
	It is error message in lack of water. Fill water inside chamber.
Door is not open	It is because inner pressure is not completed released. Check the pressure gauge and release inner pressure manually by opening Pressure normalizing valve.

Memo

Memo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