

WiseClave®
Digital AutoClave
(Steam Sterilizer)

Operation Manual
(Version 1.3.3)

written for
Model WACS-1045, WACS-1060, WACS-1080, WACS-1100

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Introduction

Thank you for purchase of DAIHAN Automatic Autoclave (Steam Sterilizer).

DAIHAN Autoclave is a cost-effective steam sterilizing system with fully automatic digital controller. DAIHAN Automatic Autoclave has many superior features as follows;

- Fully Automatic Sterilizing Operation controlled by Microprocessor
- Complete Safety Pressure Mechanism
- Strong and Safety Screw Handle Mechanism
- Over-Temperature, -Pressure, -Current Protection Capability
- Automatic Over-pressure Release Valve ensure user safety
- Let the user easily operate the unit by displaying current/set temperature and time remained
- Let the user push just one button to cycle the unit from start to finish



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Specifications

WACS-1045 WACS-1060 WACS-1080 WACS-1100

Technical Information

		WACS-1045	WACS-1060	WACS-1080	WACS-1100
Controller		Fully Automatic Digital PID Controller			
Automatic Function		Push just one button to cycle the unit from start to finish			
Dimension (w x d x h)	Internal(mm)	Φ300×h650	Φ350×h650	Φ400×h630	Φ450×h630
	External(mm)	680×470×880	680×470×900	780×580×900	780×580×900
Dimension Of Basket	Upper(mm)	Φ290×h220	Φ340×h220	Φ390×h210	Φ440×h210
	Lower(mm)	Φ290×h320	Φ340×h320	Φ390×h310	Φ440×h310
Heater		2 kW	3 kW	4 kW	5 kW
Capacity		45 Lit.	60 Lit.	80 Lit.	100Lit.
Temp.	Range	Ambient 5℃ ~ 132℃			
	Accuracy	±0.5℃ at 121℃			
Display		Digital LCD Display (PV & SV displayed)			
Timer		99 hr 59 min 59 sec			
Pressure		1.2 Kg/cm ² at 121℃, 2 Kg/cm ² at 132℃			
Gauge		0 ~ 3 kgf/cm ²			
Material	Chamber	Stainless Steel			
	Cabinet	Powder Coated Steel			
Door Packing		One Touch Pressure Handle Type			
Safety Device		Over Temp., Over Pressure, Over Current Protector			
Basket		2 ea of Wire Basket Included			
Power Supply*		AC 110 V, 60 Hz or AC 220 V, 50 / 60 Hz			

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User Considerations

Be careful to operate the device.

You should read this manual carefully before using.

The device should only be operated by laboratory personnel especially trained for this purpose and familiar with all precautionary measures required for working in a laboratory.

Correct Use

DAIHAN Autoclaves have been designed for the following purposes;



- For sterilizing glassware, rubber items, pipette tips, instruments, filter bodies, as well as consumables, waste in bags, and to destroy infectious or septic materials
- For sterilizing liquids, solutions and culture mediums in open or lightly closed vessels
- For sterilizing foodstuffs
- For streaming liquids or for dissolving agar
- For non-pressurized disinfection of heat-sensitive culture media and solutions

Incorrect Use

Liquids and foods must not be sterilized in pressure-sealed containers.

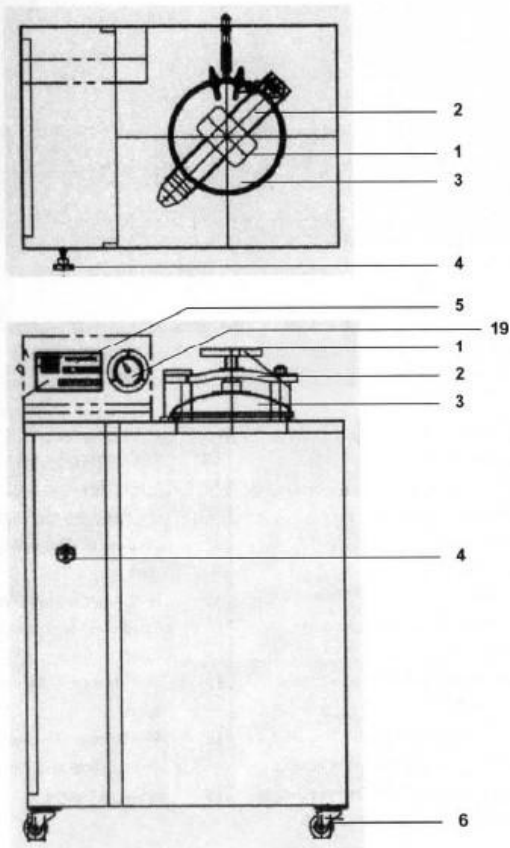
Easily combustible or toxic liquids must not be sterilized

The following products are not suitable for sterilization;

- Wooden items
- Bonded parts
- Plastic materials sensitive to hot water (e.g., screw tops)
- Electrical equipment
- Vessels or instruments made from steel or iron
- Metering equipment, unless their suitability for steam sterilization is specifically mentioned

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Operations





- | | | | |
|----|------------------------------------------|----|------------------------------------------------------------------------------------|
| 1 | Lid Handle | | |
| 2 | Grip Structure | | |
| 3 | Lid | | |
| 4 | Manual Ventilation Valve | | |
| 5 | Control Panel | | |
| 6 | Moving Wheel | | |
| 7 | P.V.: Current Temperature and Mode | | |
| 8 | S.V.: Set Temperature and Data at a Mode | | |
| 9 | Lamp indicating START | | |
| 10 | Lamp indicating HEATER output | | |
| 11 | Lamp indicating TIMER operation | | |
| 12 | Lamp indicating AUTO-TUNING | | |
| | | | operation |
| | | 13 | START/STOP button |
| | | 14 | SET button |
| | | 15 | Shift Left button: For changing the position of digit in Set Value (to the Left) |
| | | 16 | Shift Right button: For changing the position of digit in Set Value (to the Right) |
| | | 17 | INC button: For increasing Set Value |
| | | 18 | AT button: For displaying Auto-tuning, Time and Temperature. |
| | | 19 | Pressure Gauge |

Operation of Lamps

- **START lamp:** ON when the START switch is pushed and OFF when stop
- **OUT lamp:** ON when HEATER operating
- **TIMER lamp:** Start blinking when START switch is pushed, ON when the target temperature is reached and OFF when the Set Time is reached
- **AT lamp:** blinking when AUTO TUNING is in progress and OFF when it finishes.

Operation of Switches

- **START/STOP button:** toggled with START and STOP
- **SET button:** change the Mode to set Temperature and/or Timer in normal status



If you push SET(MODE) button over few seconds, you can enter to Engineer's Mode.

Please Don't adjust anything. If you adjust something, it could be caused serious problem.

- **Shift Left button:** change the position of digit in Set Value (to the Left)
- **Shift Right button:** change the position of digit in Set Value (to the Right)
- **INC button:** increase the Set Value of Temperature or Timer
- **AT button:**
 - 1) The current Temperature or Timer value is displayed repeatedly when pushed in normal status
 - 2) Start AUTO TUNING when pushed for 4 seconds in normal status
 - 3) Set the value to "0000" in each Mode.

Operation Method

I. Preparation

- DAIHAN Autoclave is a kind of Steam Sterilizer. So the user should fill water into the pressure vessel before operating the unit.
- Distilled water should be used.
- The user should pour water to the pressure vessel, so the bottom part of the vessel (sensor cover) should sink under the water.
- Must check closing of Manual Ventilation Valve (4)

II. Controller Setting

1. Initial Status

- ① Confirm the power supplied (110V, 50Hz or 220V, 50/60Hz)
- ② Turn on the Power Switch at the left side of control panel
- ③ Then the current temperature in the chamber is displayed on the P.V., and set temperature is displayed on the S.V.

P.V. 27.0

S.V. 27.0

2. Setting Temperature

- ① Push the SET button
- ② Then the "TEMP" is displayed on P.V. and Set Temperature is displayed on S.V.
- ③ Change the position of digit which you want to change the value using Shift Left / Shift Right buttons
- ④ Change the value to set the target temperature

P.V. TEMP

S.V. 121.0

3. Setting Timer

- ① Push the SET button
- ② Then the "TIME" is displayed on P.V. and Set Time is displayed on S.V.
- ③ Change the position of digit which you want to change the value using Shift Left / Shift Right buttons
- ④ Change the value to set the target time



4. Heating

- ① Push the SET button to save the set values
- ② Then the machine return to the initial status
- ③ Push the START/STOP button to start heating
- ④ The machine heat the chamber until the set temperature is reached

5. Timer Operation

When the set temperature is reached, the temperature in the chamber is maintained at the set value and the timer start to operate.

6. Change the Display

By pushing the AT button, the Current Timer value and Set Temperature is displayed repeatedly

7. End of Sterilization

When the set time has passed and the sterilization is finished, after 30 seconds of buzzer ring, the steam released and the pressure is removed.

III. After Sterilization

- After sterilization, steam is released out through the hose located at the bottom-left side of the housing. But the water remained in the vessel need not be removed.
- When the automatic sterilization is completed, steam is released automatically. You could check it with the pressure gauge (#20 in page 6) embedded in the controller box. After that, you may open the lid handle. If you want confirm, you may use the manual ventilation valve (#5 in page 5).
- If you want to remove the water remained in the vessel, you could do it with the drain valve. User can open the left side of the body, and can find the drain valve at the bottom part in there. Connect a kind of hose to the valve and open it, then the water remained in the vessel can be poured out.

IV. Auto Tuning Function

In the manual page 7 ~ 9, the function of AT button is described. As described in page 7, user can start AUTO TUNING by pushing AT button for 4 seconds in normal (i.e., heating or timer operating) status. AUTO TUNING function is for tuning the temperature control of the machine more precisely at the set temperature. The machine is tuned at the temperature 121℃ as a factory default value, and it is used as the standard sterilizing temperature in most experiments.

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Safety Instructions



Only run the Sterilizer for correct use.

Destruction bags must be open during sterilization, otherwise they may burst.

Do not open sterilizing chamber until full sterilization operation is finished.
Watch for hot steam and hot water!

Hot steam may escape when the lid is opened.
The lid handle should only be gripped at the experiment end.
Step back when opening the sterilizer.

You must wear the following protective items when opening the sterilizing chamber and removing the sterilized articles;

- Apron
- Eye protectors
- Heat insulated gloves

Watch for hot surfaces and hot steam!

After sterilizing liquids;

Danger from retardation of boiling.

For open vessels containing up to 1 liter: wait at least 2.5 hours

For open vessels containing up to 2 liters: wait at least 3 hours

Do not remove flasks or bags until the chamber temperature drops below 70°C.

Do not sterilize pressure-sealed vessels. Explosion hazard!

Watch for broken glasses!

The equipment must not be operated in hazardous locations!



Do not hang onto or lean against the open lid. DO not climb onto the autoclave, as this may cause the autoclave to tilt.

When sterilizing liquids;

Do not fill vessels more than two-thirds full, as otherwise liquids may boil over.

Take care to ensure that the lid seal is;

Free from dirt,

Not sticking to the lid,

Not damaged.

The lid seal must sit snugly in the groove.

Autoclaves heated electrically or from remote steam supply;

Prior to sterilization, check sterilizing chamber to ensure there is sufficient feed water.

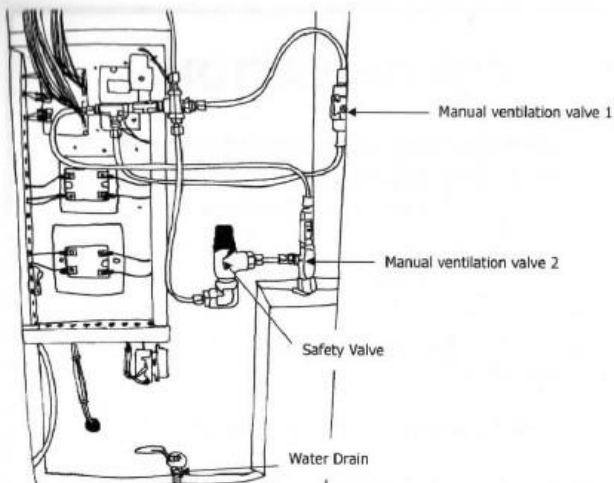
Only use demineralised or distilled water when topping up the feed water.

Do not use tap water!

No sterilization without feed water!

Before every sterilizing operation, check that the locking levers on the lid have moved all the way into the locking ring.

Allow chamber pressure gauge to slow zero before opening the autoclave.



* Manual ventilation valve 1 : Before open door, please fully release this valve for safety. And when run instruments again please close this valve.

* Manual ventilation valve 2 : Factory default setting is fully opened. But If you want adjust amount of steam exhaust. Please close this valve gently to other clockwise. Steam will exhaust slowly as closed (Good for media sterilization).

But If it was fully closed. Steam can't release after finish sterilize cycles. So please don't closed this valve fully

* Safety Valve : This valve for safety. When instruments in wrong situation. So please don't touch it any way for safety.

* Water Drain : This valve for just drain water. So when run instruments please check this valve was closed.