STURDY
APEX GROUP

Autoclave

SAT-HP series
Operation Manual

Please read manual carefully before using and keep it well for future reference

CE 2460

422-04027 v.09 10 December 2019

Contents

1. Important Safety Instructions

⚠**CAUTION:** Please install, operate and maintain the sterilizer in accordance with this Instruction Manual. Failure to do so could result in serious injury or damage to the unit.

⚠**CAUTION:** The outer casing and metal surfaces of the sterilizer are hot during operation, please do not touch it.

⚠**WARNING:** Steam and hot water may be present when opening the door after a sterilizer cycle.

⚠**WARNING:** DO NOT place alcohol or other flammable items in the sterilizer. An explosion could occur, causing personal injury.

⚠**WARNING:** DO NOT place any objects on the sterilizer.

⚠**WARNING:** Always check the pressure gauge before opening the door. DO NOT attempt to open the door if the pressure is not at zero (0).

⚠**WARNING:** Use only distilled water. Normal tap water contains minerals, especially chlorides, which have corrosive effects on stainless steel. Failure to use distilled water will invalidate the warranty. (Refer to chapter 9. Water Quality)

⚠**CAUTION:** Always allow a minimum of 20 minutes between each sterilization cycle except dry program.

⚠**WARNING:** The door must be closed completely during operation of the unit. If the “Door open” displayed, it means that the door is not closed properly.

⚠**WARNING:** Use sterilization indicator to check that sterilization has been successful.

⚠**WARNING:** Contact your supplier for service support if the safety valve is active for releasing the over-pressure.

⚠**WARNING:** Failure to follow the Maintenance Instructions will adversely affect performance and lifespan of the sterilizer, and may invalidate the warranty.

⚠**WARNING:** In an emergency, or before carrying out any maintenance, always disconnect the power cord from the outlet.

⚠**CAUTION:** Please unplug the power cord and drain off water from the reservoir if the sterilizer will not be used regularly.

⚠**WARNING:** Always check the status of the electric wire; unplug the power cord if breakage comes up. Contact your supplier for service support.

2. Explanation of Safety Symbols and Notes

	Caution, consult instruction manual for use
	Protective earth (ground)
	Alternating Current
	Attention! Hot surface
	Disposal of Electrical & Electronic Equipment (WEEE): This product should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased this product. (European community only)
	Manufacturer
	Date of manufacture It is a 6-digit number. The first 4 digits represent the year, followed by 2 digits of the month.
	Consult instruction manual for use
POWER	Power switch
ON	Connection to the mains
OFF	Disconnection from the mains
NOTE	Indicates information that user should pay special attention to.
CAUTION	Indicates correct operating or maintenance procedures in order to prevent damage or destruction of the equipment or other property.
WARNING	Indicates correct operating or maintenance procedures in order to prevent damage or destruction of the equipment or other property.

3. Unpacking

⚠**CAUTION:** Careful handling autoclave, pay attention to the safety of personnel.

A. Unpack top cover of the wooden case.
B. Unpack 4 side covers of the wooden case.
C. Open the maintenance enclosure to remove the 4 fixing screws on the base wooden case.
D. There are 4 rings provided on the top of the enclosure for lifting the autoclave to remove the base wooden.
E. Install this autoclave to a suitable location.

Check all accessories are present as follows (accessories are packed inside the sterilizer chamber):

- Instruction Manual ×1
- Tray Base ×1
- Glass Tube ×2
- Printer Paper ×5
- USB flash Memory x1

Optional accessory:

- Trolley with Loading Plate (Rail Included)
- Baskets
- Plate Set

*The accessories may be varied per the order request.

4. Installation

4.1 Installation Environment

Please follow local wiring rules for correct installation by a technician, and refer to the environment requirement as specified in chapter “10. Specifications”.

Environment setting refer to the chapter 6.3.15 Calibration

4.2 Set Up Autoclave

⚠**NOTE:** Install the autoclave as instructed in the “installation plan” onto a horizontal floor that can support it, and keep a minimum distance of 80 cm from the walls for ventilation and maintenance.

A.1. Locate the autoclave and adjust its plane so that door site is slightly higher than the rear side about 1-2 degree as shown in Figure 1.

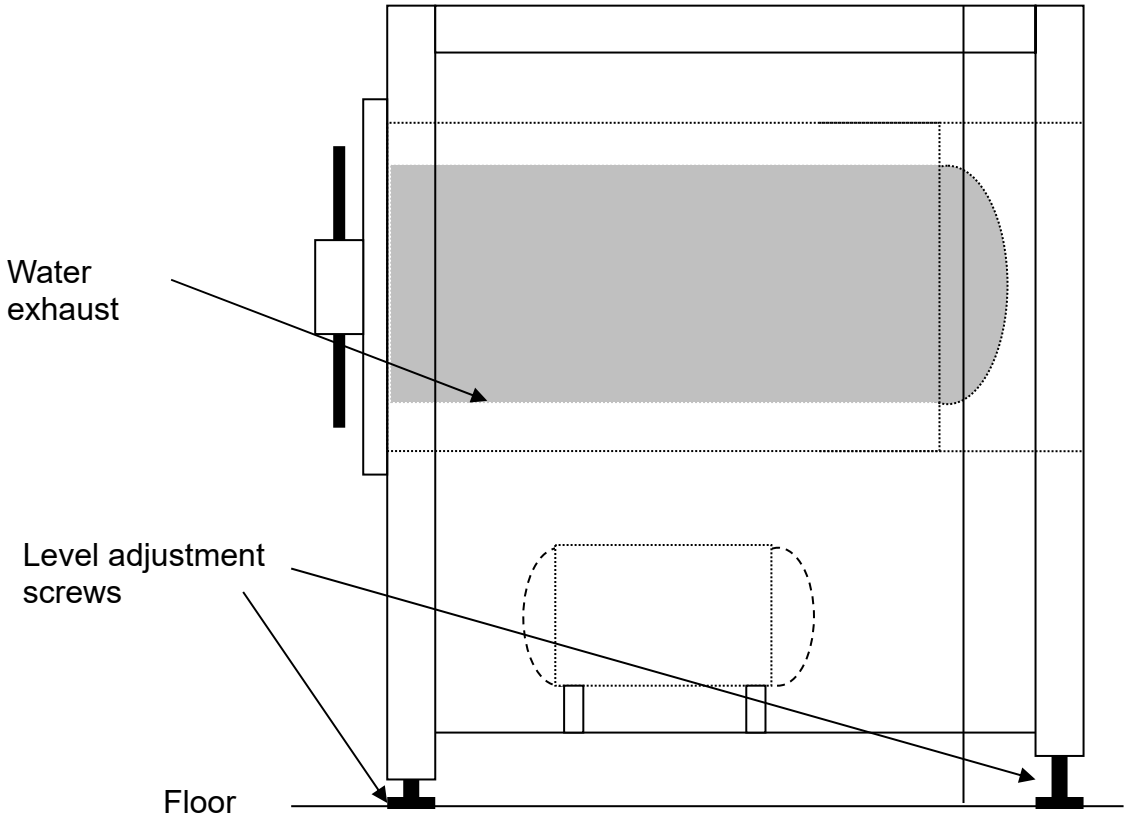


Figure 1

A.2. Connect the pipes as following:

1. Water inlet for steam generator, diameter of ø½”
2. Water inlet for vacuum pump, diameter of ø½”
3. Exhaust outlet for chamber, diameter of ø½”
4. Exhaust outlet for vacuum pump and steam generator, diameter of ø1”

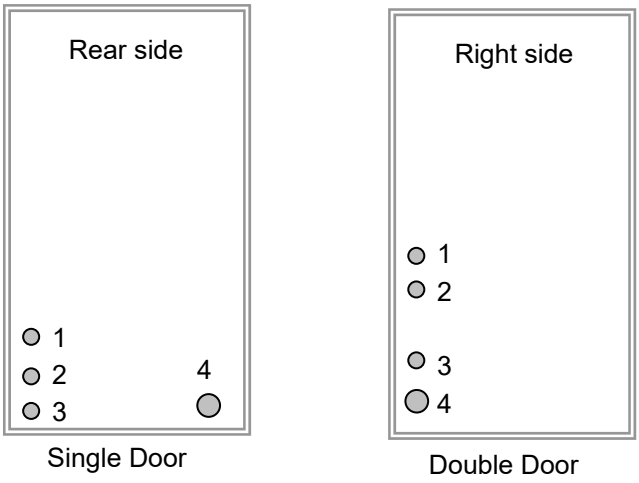


Figure 2

CAUTION: Drain out the water according to the local national law.

CAUTION: Follow your national rules for piping and wiring.

CAUTION: Make sure that the door can be opened freely after installation.

WARNING: Do not install or operate the sterilizer in areas where flammable items or volatile substances are used or stored. An explosion could occur, causing personal injury. An installation site with good air circulation is required.

B. Make sure that all steps as shown above are connected correctly, and then supply the distilled water to the water inlet as shown in position 1 of Figure 2.Water will be filled automatically until “FULL” water level reached when power on and start the autoclave.

NOTE: Examine that pipelines connected from “exhaust outlet for vacuum pump and steam generator” is not obstructed by the over-bending as sown in Figure 3. If it were happened, it may cause malfunction of vacuum operation and lock the door. Check that the pipelines are correctly installed as shown in Figure 4.

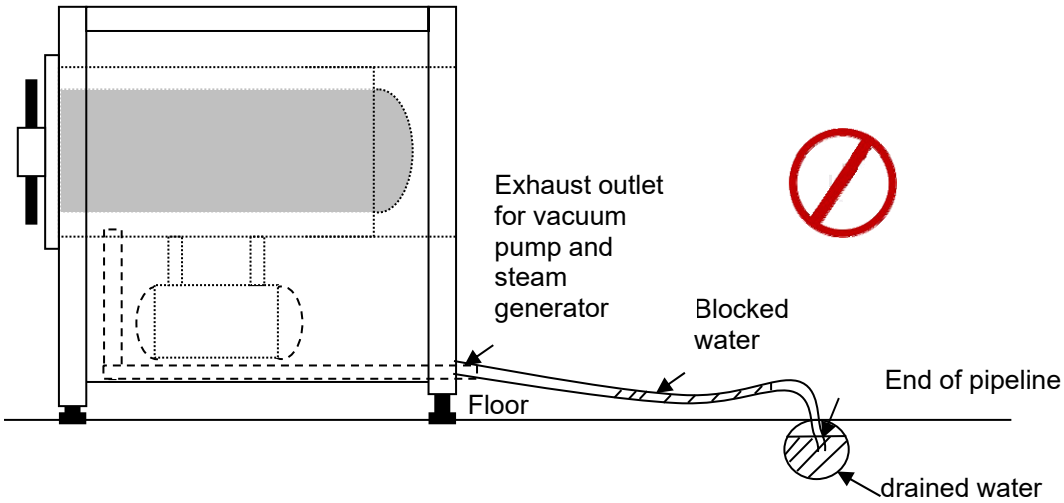


Figure 3

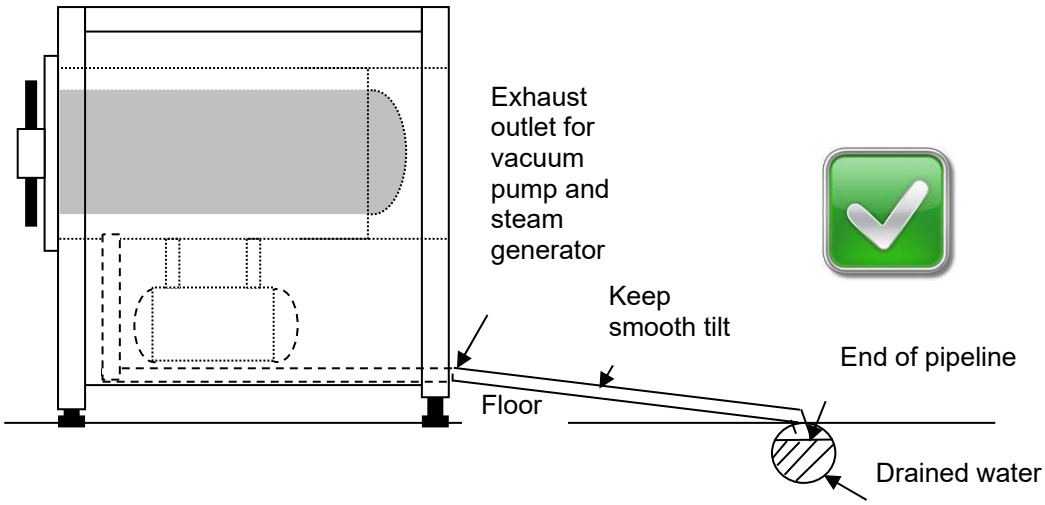


Figure 4

C. Turn off the independent circuit-breaker and then connect the power line of autoclave according to the national wiring regulation. Check that the wirings are reliable secured with suitable capacity for supplying the power, then turns on the circuit-breaker.

CAUTION: The autoclave MUST BE earthed!

CAUTION: The circuit-breaker is also serves as a disconnect device for disconnecting the power, it should be so located that the circuit-breakers are not blocked by any other devices.

D. Turn on the circuit-breaker 1 and circuit-breaker 2 in the control box of the autoclave, and then switch on the power by the key-lock switch on the panel. Visual inspect the LCD panel is displayed as showing in Figure 13. Turn Off the power and repeat the steps per chapter 4.2A to 4.2D if the autoclave is not shown correctly, and consult with the local distributor or qualified electrician for help.

CAUTION: You should change the phase as mention in 4.2C if the rotation directions of vacuum pump and water supply pump are not coincident with their marking.

NOTE: The exhaust ball valve has been calibrated to its preset position, you may change it as following steps if required:

1. Start liquid program.
2. Adjust the ball valve while in the exhaust stage. See Figure 5 and Figure 6.

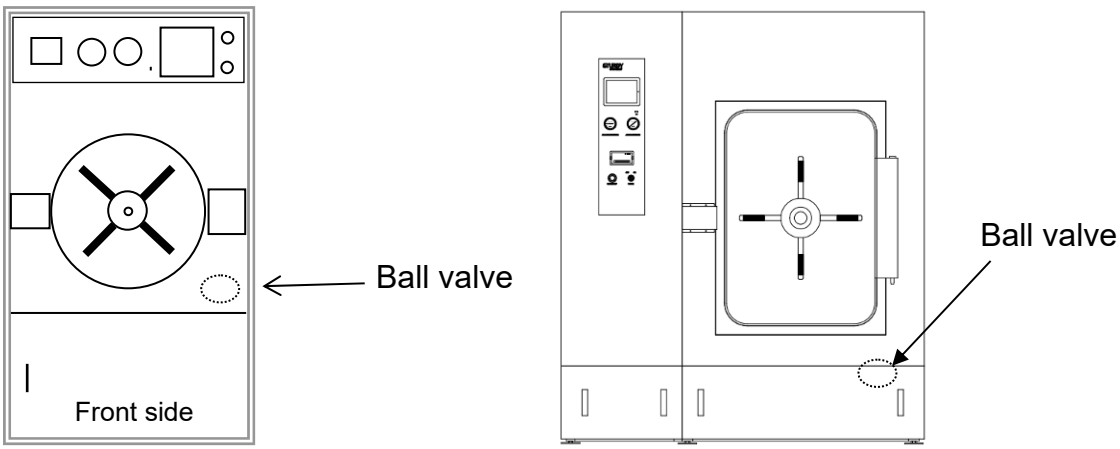


Figure 5

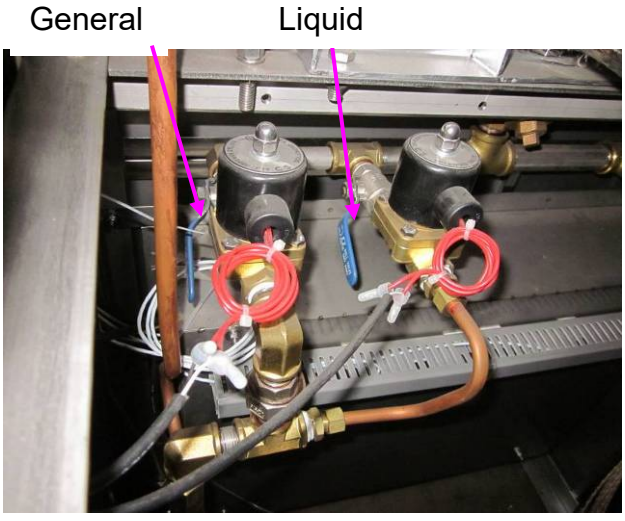


Figure 6

5. Introduction
5.1 Intended use
This product is a Floor stand high pressure steam sterilizer which is designed and developed for the sterilization of wrapped and unwrapped items. It can also perform sterilization of liquid which is not for medical purpose.

5.2 Description of the Sterilizer
5.2.1 External View
Single door

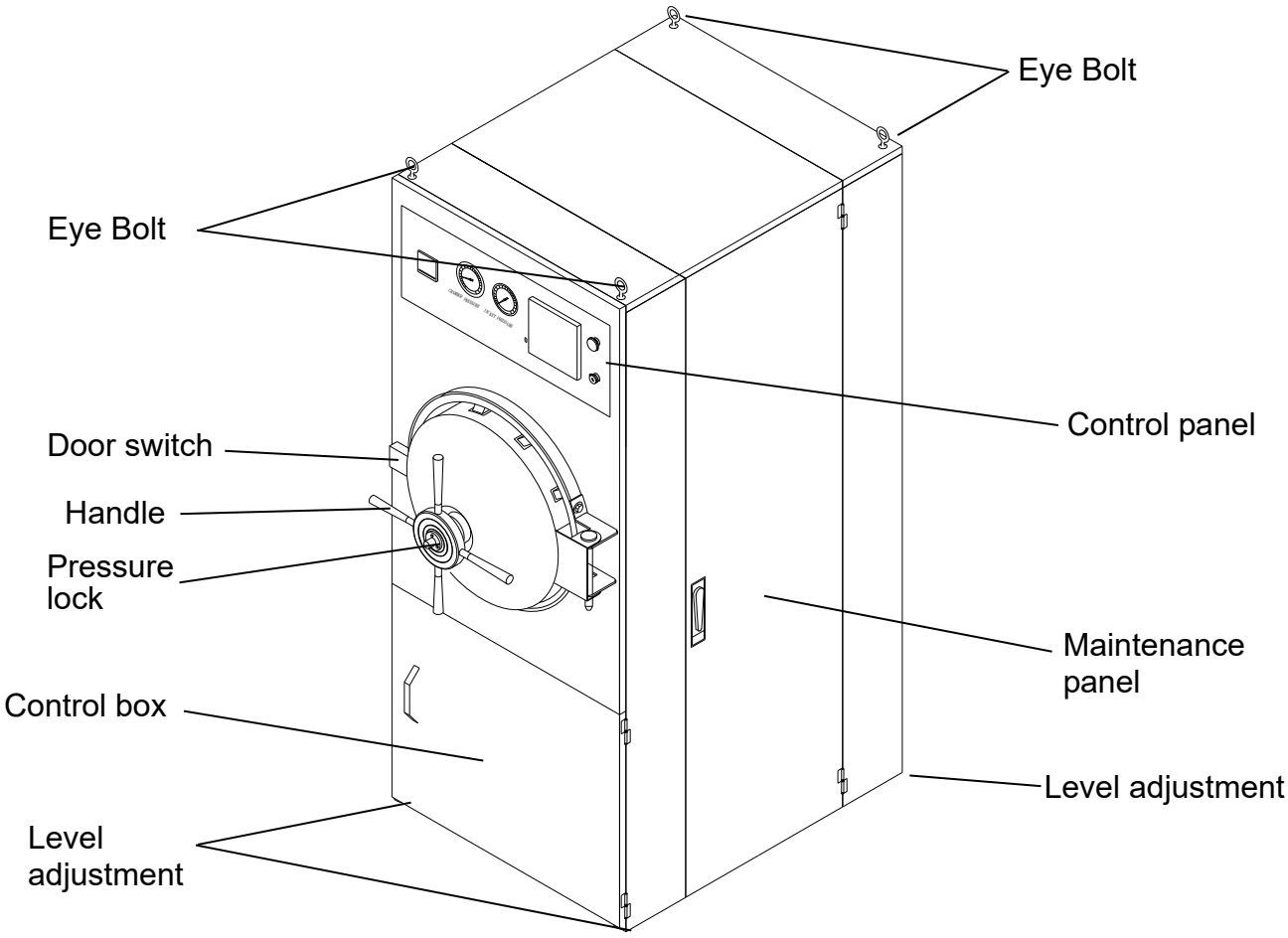


Figure 7 Front View

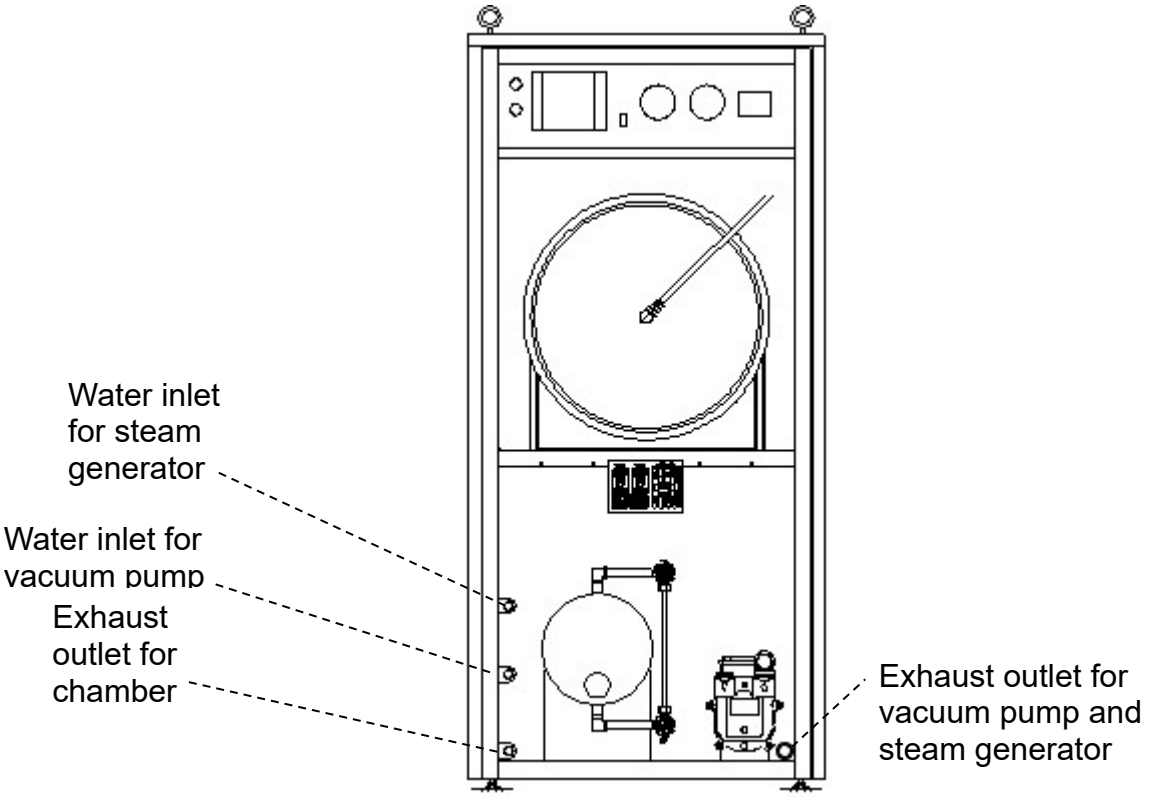


Figure 8 Rear View

Double Door (side view)

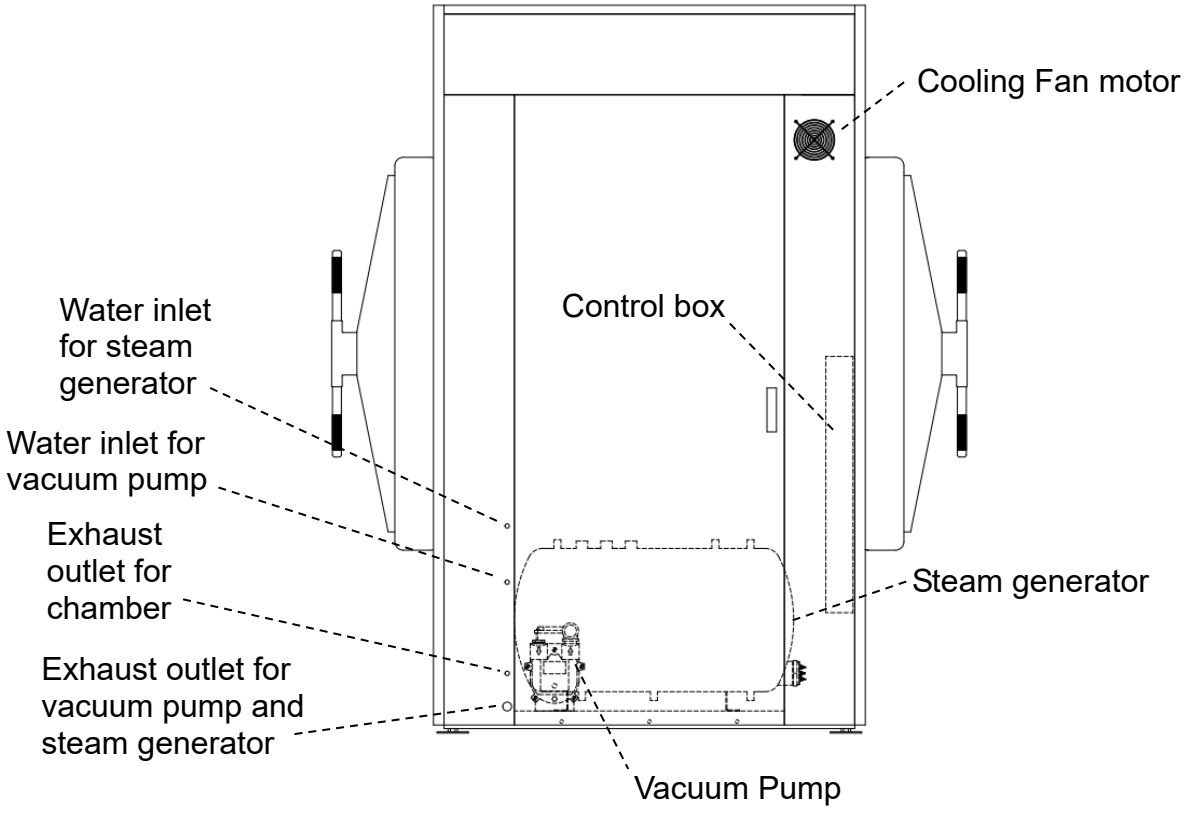
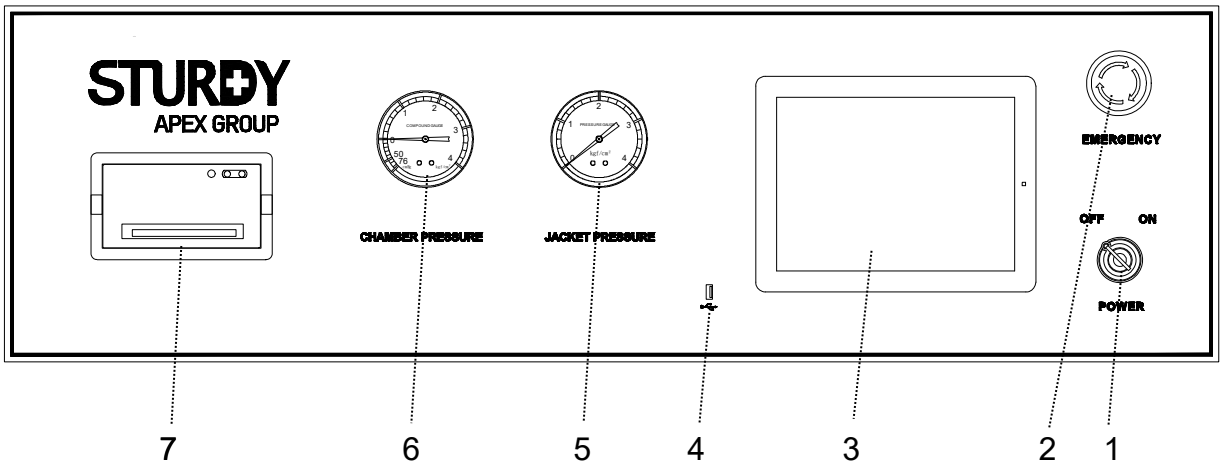
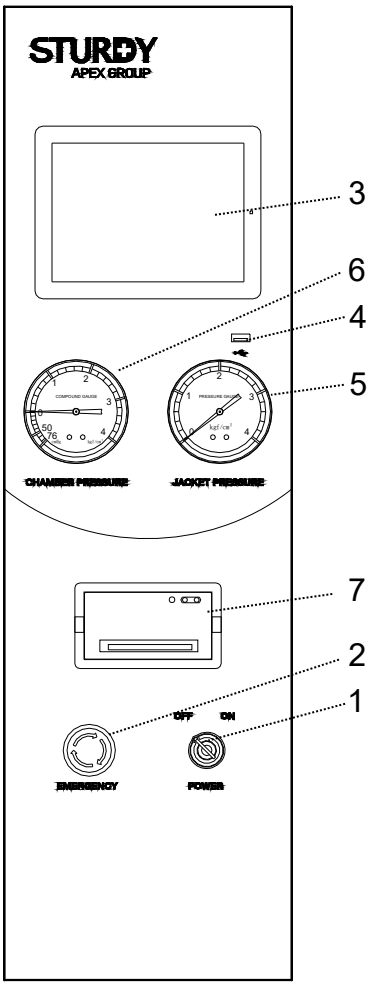


Figure 9 Side view of Double door

5.2.2 Control Panel

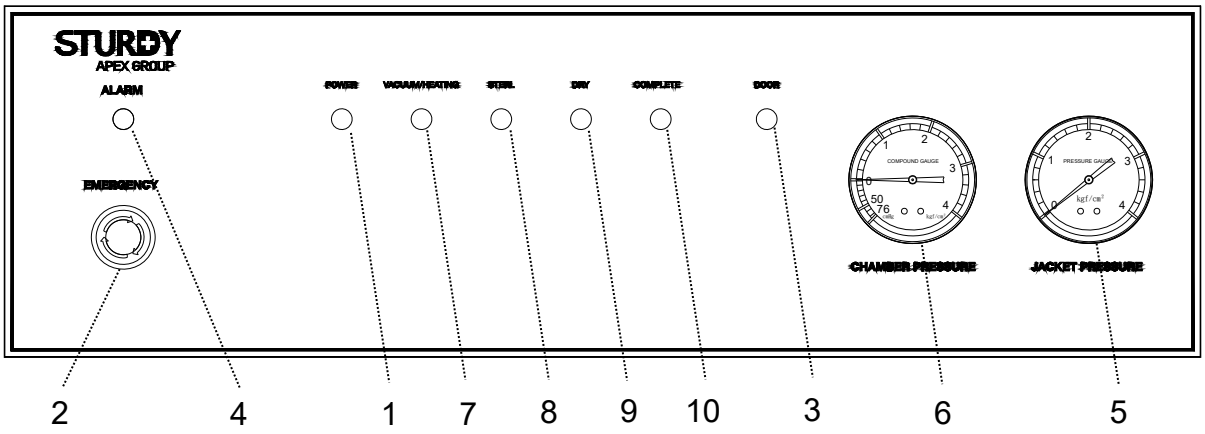


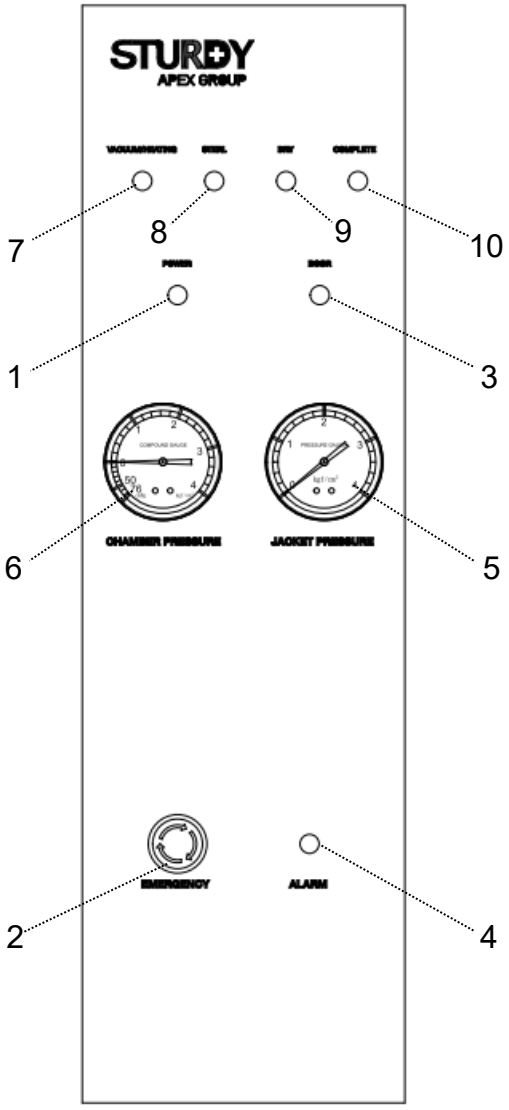


No	Identification	Function
1.	POWER	Power switch
2.	EMERGENCY	Emergency stop button Stop program and release pressure/vacuum.
3.	TOUCH PANEL	Touch panel Display panel and input keyboard.
4.		USB port (for sterilization data storage)
5.	JACKET PRESSURE	Pressure indicating gauge for jacket pressure
6.	CHAMBER PRESSURE	Pressure indicating gauge for chamber pressure
7.	PRINTER	Printing sterilization data

Figure 10 Panel Layout of Loading

Unloading side control panel (for double door)





No	Identification	Function
1.	POWER	Power Light
2.	EMERGENCY	Emergency stop button Stop program and release pressure/vacuum.
3.	DOOR	Door Light **(When light turn on can be door opening)**
4.	ALARM	Alarm light
5.	JACKET PRESSURE	Pressure indicating gauge for jacket pressure
6.	CHAMBER PRESSURE	Pressure indicating gauge for chamber pressure
7.	VACUUM/HEATING	Pre-vacuum phase indication light
8.	STERI	Sterilization phase indication light
9.	DRY	Exhaust and Dry phase indication light
10.	COMPLETE	Sterilization cycle complete indication light

Figure 11 Panel Layout of unloading side

6. Operation
6.1 General Process

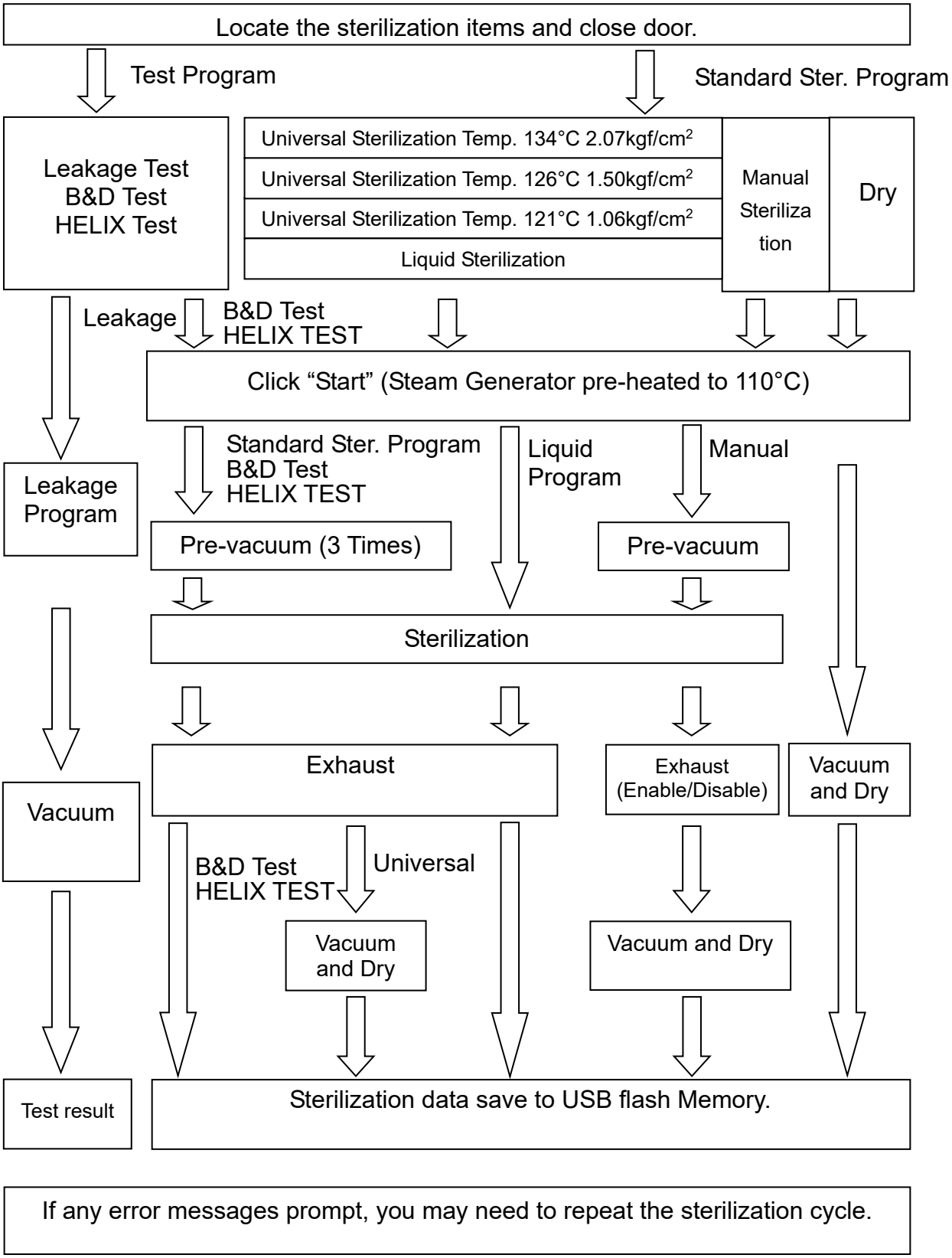


Figure 12

6.2 Flow of Operations

6.2.1 Power on screen

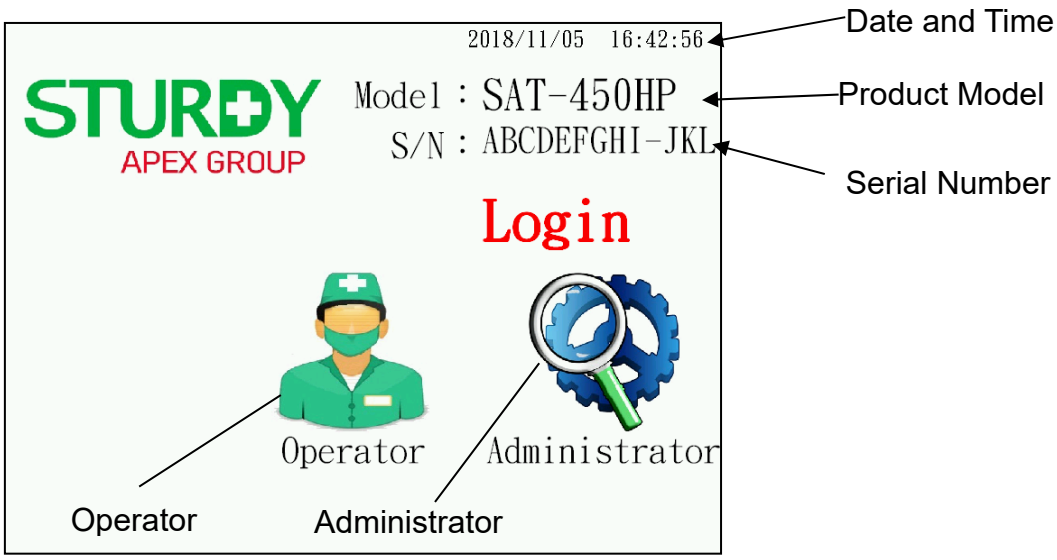


Figure 13 Welcome message

6.2.2 Login screen

a. - Click “Operator” icon to login

Enter the operator’s user name and password (Figure 14).

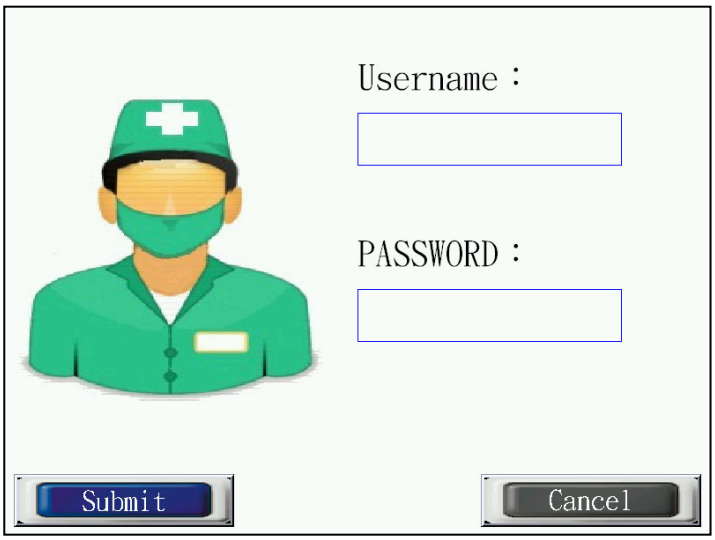


Figure 14

Default accounts and passwords:

Account OP1/ password: 0000
Account OP2/ password: 0000
Account OP3/ password: 0000
Account OP4/ password: 0000
Account OP5/ password: 0000

b. – Click “Administrator” icon to the administrator mode.
Enter the administrator name and password (Figure 15)。.

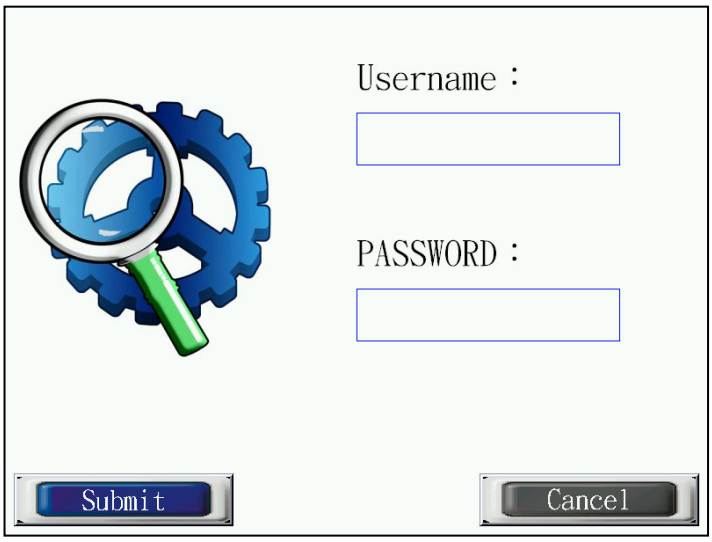


Figure 15

Default accounts and passwords:
Account EN1/ password: 0000
Account EN2/ password: 0000

6.2.3 Menu screen

Select sterilization program and system setting.

◎Altitude ≤ 2000M

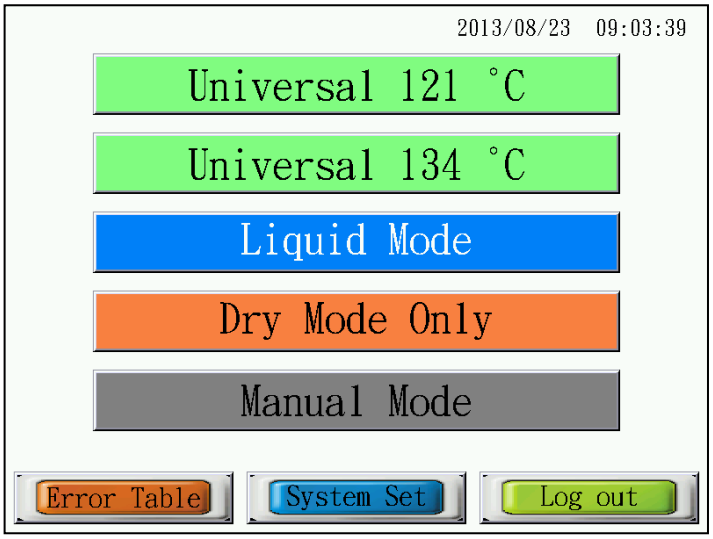


Figure 16

◎Altitude > 2000M

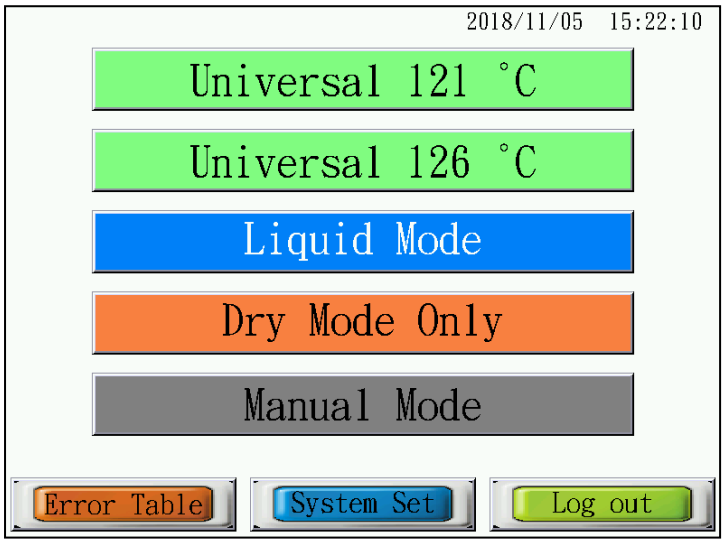


Figure 17

6.2.4 Program information

A. Universal 121°C program

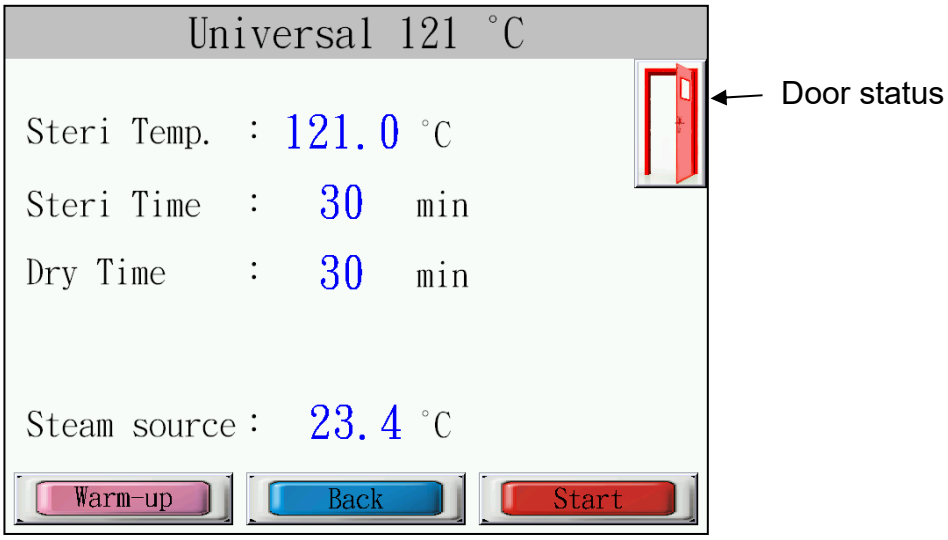


Figure 18

B. Universal 126°C program

This program is execution at > 2000M altitude.

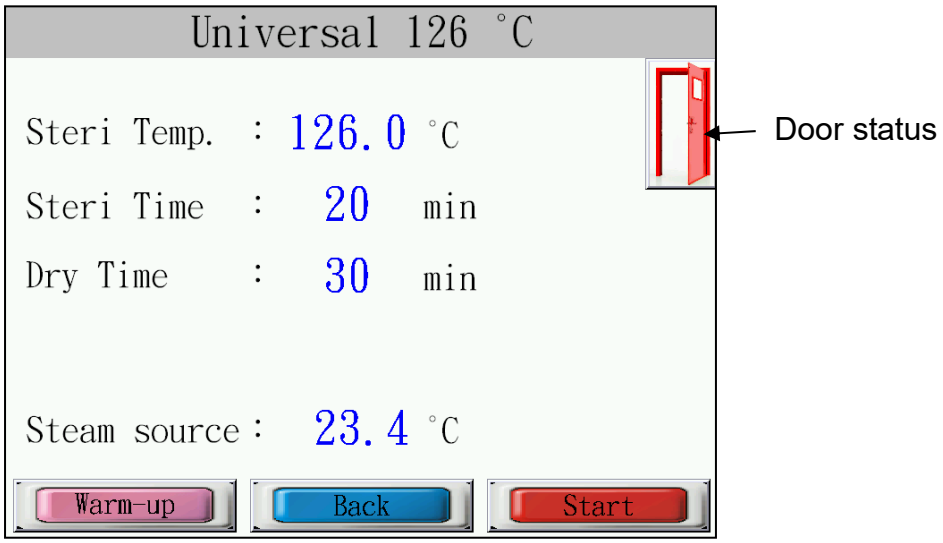


Figure 19

C. Universal 134°C program

This program is execution at ≤ 2000M altitude.

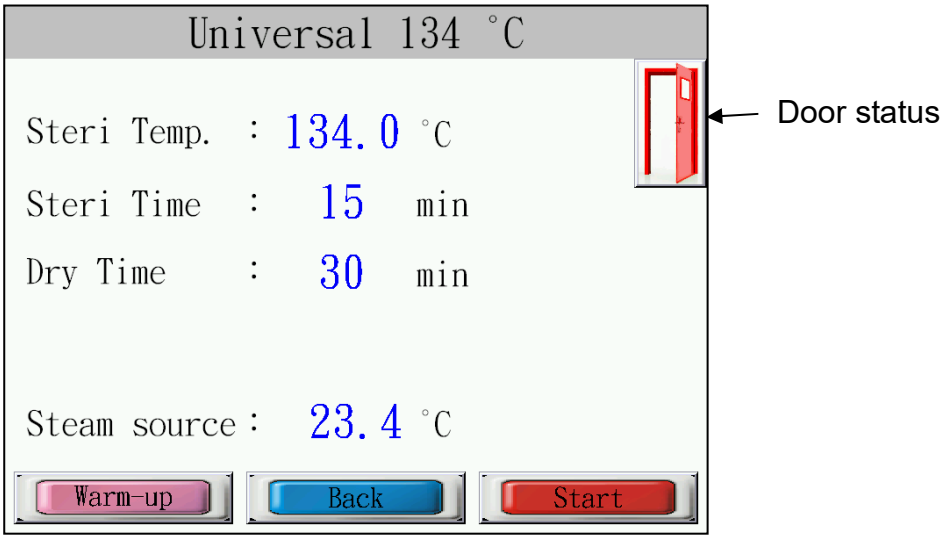


Figure 20

D. Liquid Program

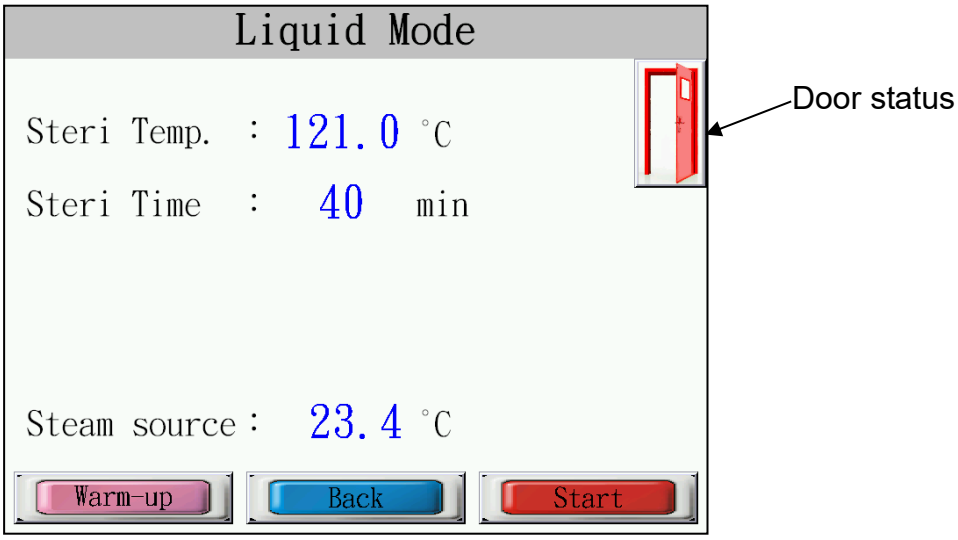


Figure 21

E. Dry program

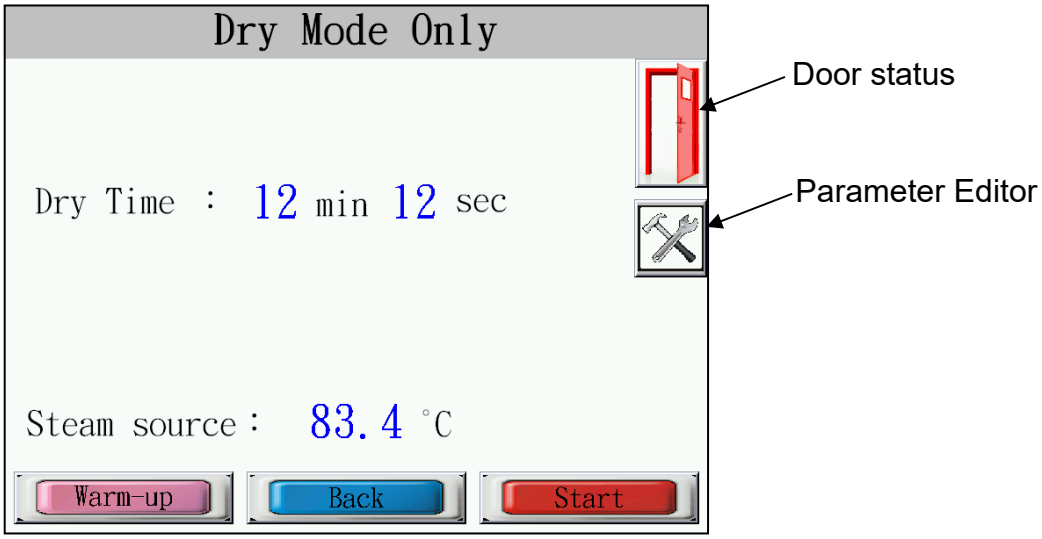


Figure 22

E-1. Default parameters of Dry program

Select the parameter field and enter the parameters.

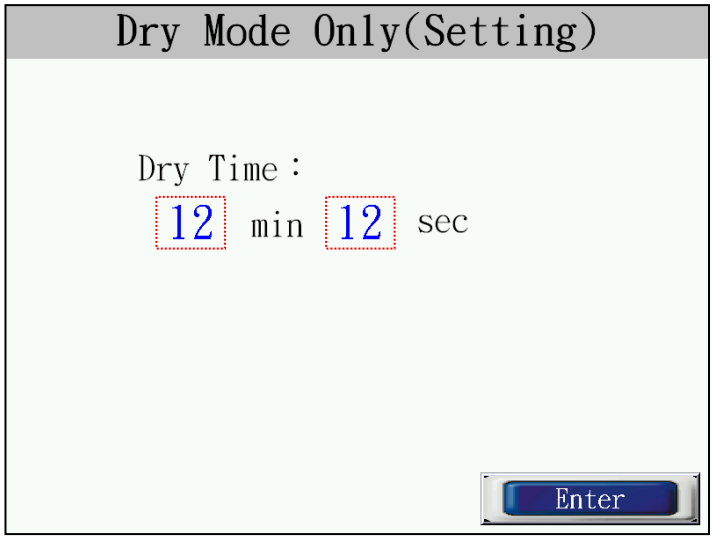


Figure 23

Press “Enter” to confirm the parameters and returns to previous menu.

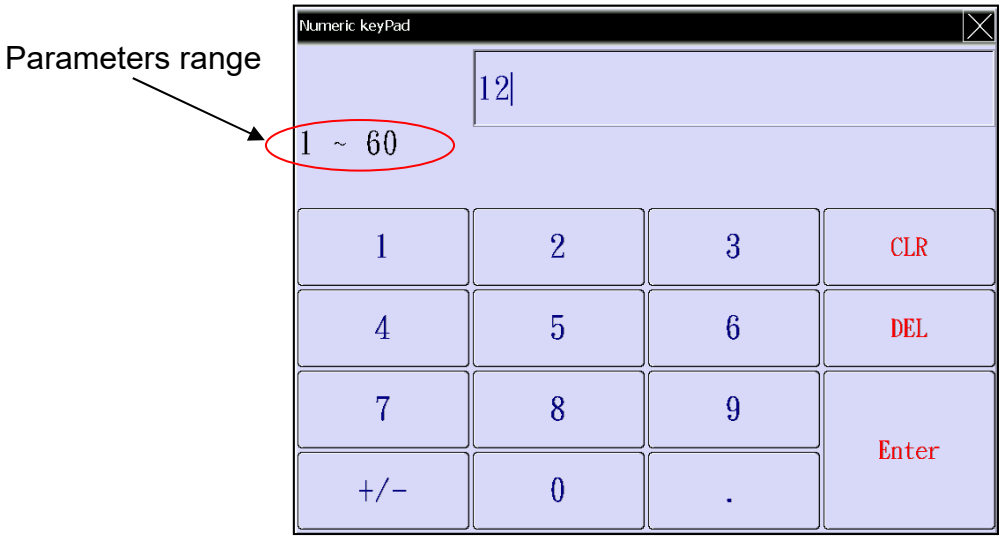


Figure 24

F. Manual setting mode

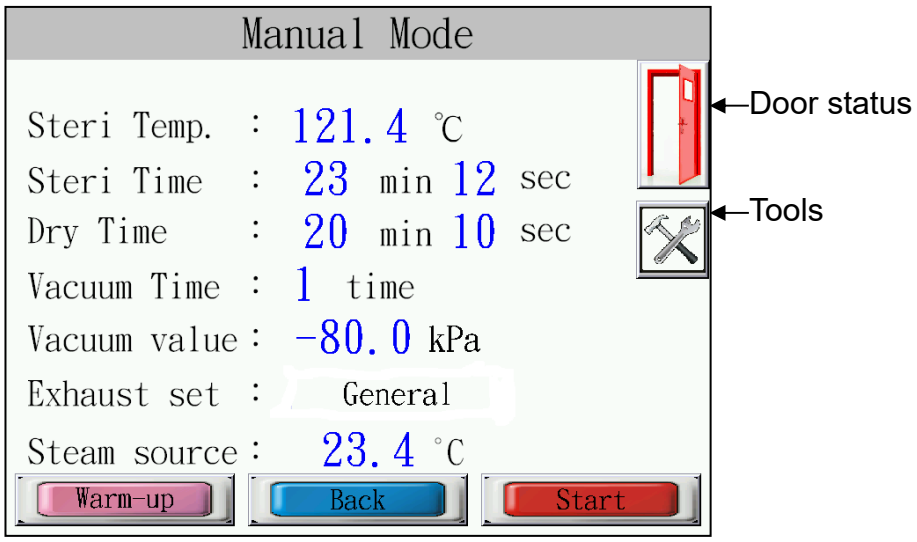


Figure 25

Exhaust set has two modes, general and a liquid.

F-1. Manual sterilization

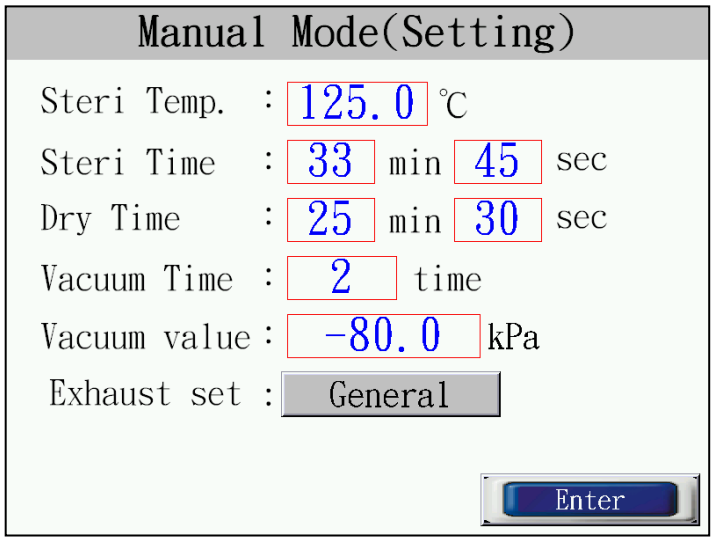


Figure 26

Parameters range：
Sterilization Temperature：105 ~ 135°C (Altitude ≤ 2000M)
105 ~ 132°C (Altitude > 2000M)
Sterilization Time：0 ~ 60 min 59 sec
Dry Time：0 ~ 60 min 59 sec
Pre-Vacuum Time：0 ~ 5
Vacuum Value：-10 ~ -90 kPa
Exhaust set has two modes, general and a liquid.

⚠**Warning:** Users who define the parameters should take their own responsibilities and obligations to undertaken the risk of sterilization uncertainty.

6.2.5 Executive Screen

Example：Universal 134°C, Press “Start” to start sterilization cycle and progressing (Figure 27)

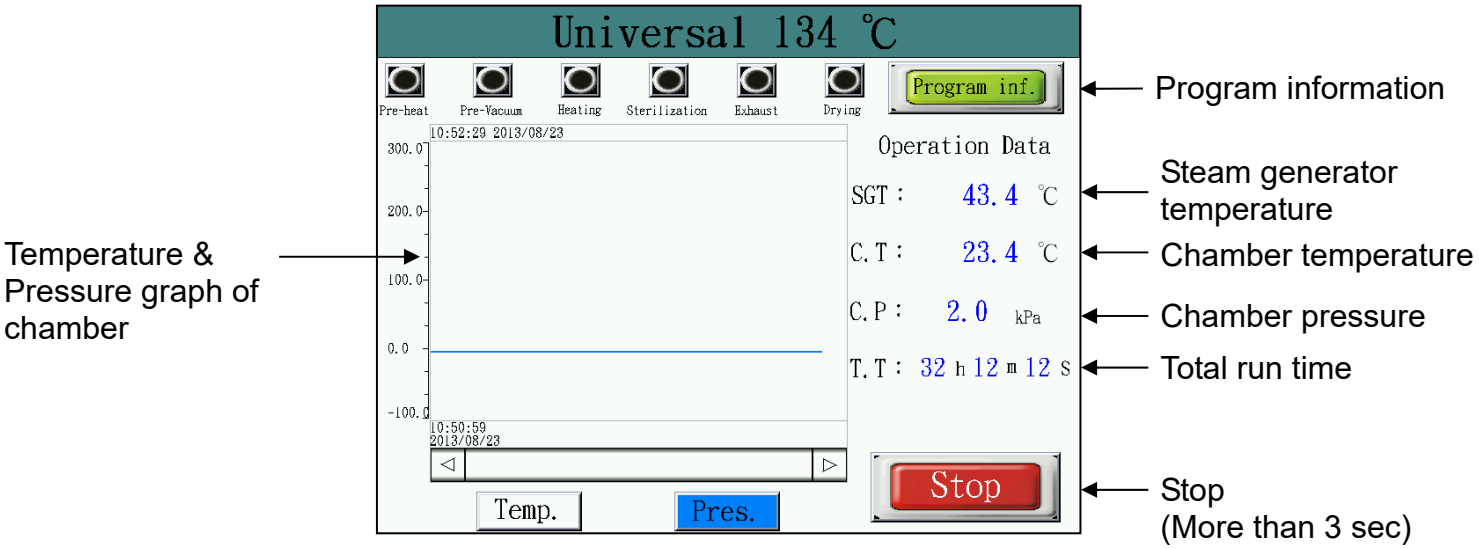


Figure 27

Sterilization phase Indicating signals：

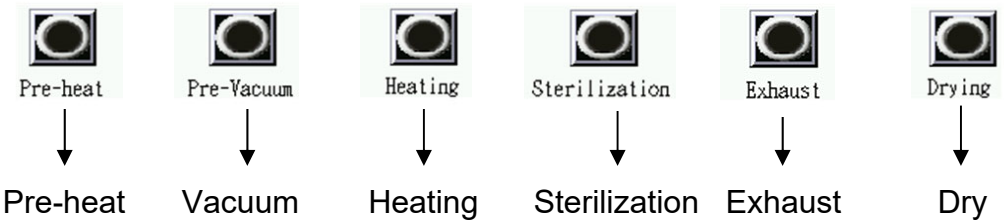


Figure 28

Temp.：Display curve of Jacket and chamber temperature

Pres.：Display curve of chamber pressure

Abbreviation:

SGT：Steam generator temperature/ Jacket temperature	C.P：Chamber pressure
C.T：Chamber temperature	T.T：Total time

NOTE: Only one curve of temperature or pressure can be displayed at one time.

Press ”Program information” icon as shown in Figure 29.

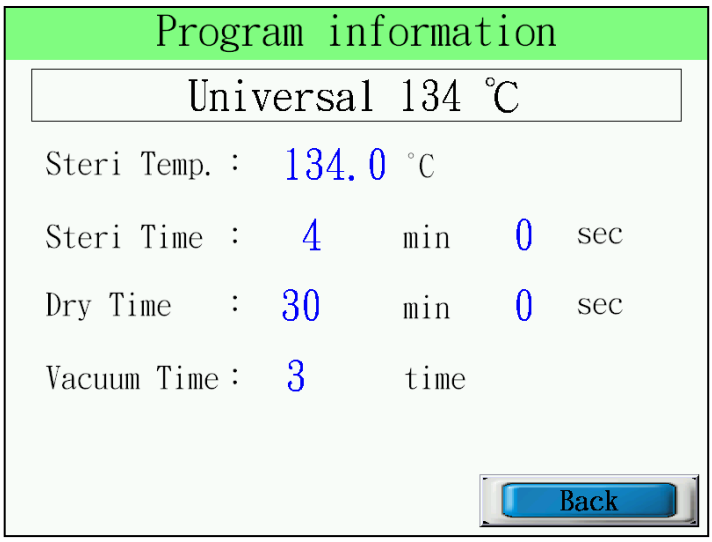


Figure 29

6.2.6 Cycle Complete Screen

Press next page icon to save data once completing a sterilization cycle.

⚠**Warning:** The cycle not complete don’t opening chamber door.

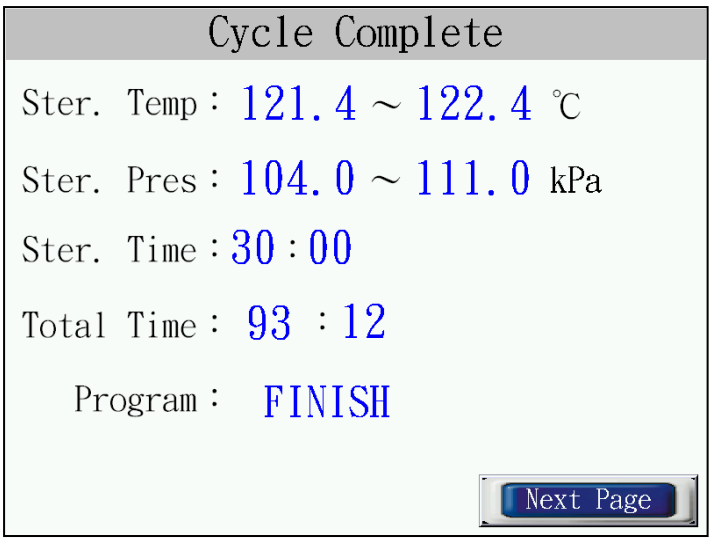


Figure 30

Note: Only “Total Time” will be shown and the rest message display with “----“ if a Dry Program has been selected.

Save Data：Insert a USB flash memory, please.

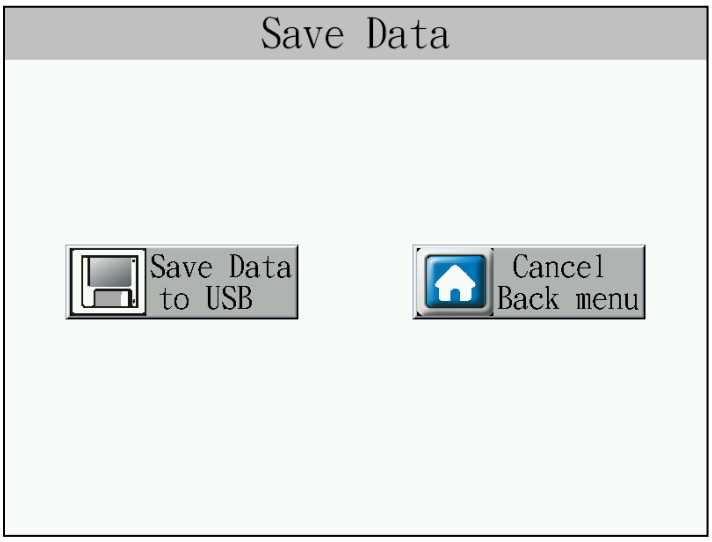


Figure 31

Save Data to USB：To saving the sterilization data of program to a USB storage media and return to Main Menu.
Cancel back menu：Quit without saving and return to Main Menu.

Figure 32 Data save to USB success screen

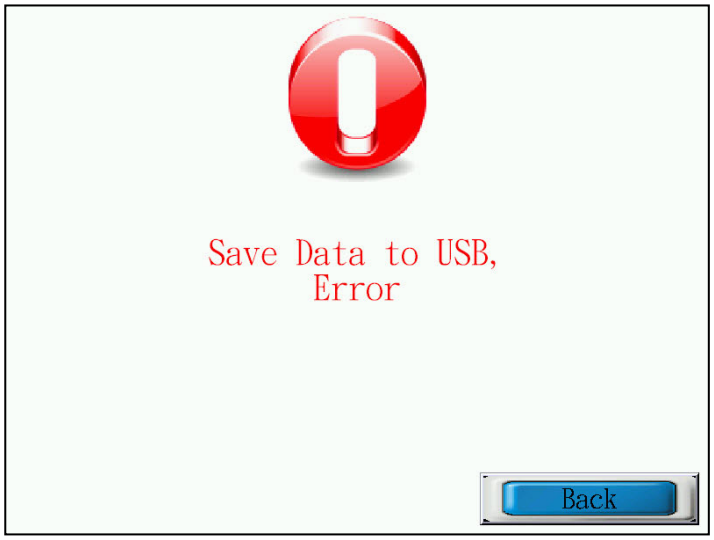


Figure 33 Data save to USB fault screen

6.3 System setting

Press ”System set” icon as shown in Figure 34

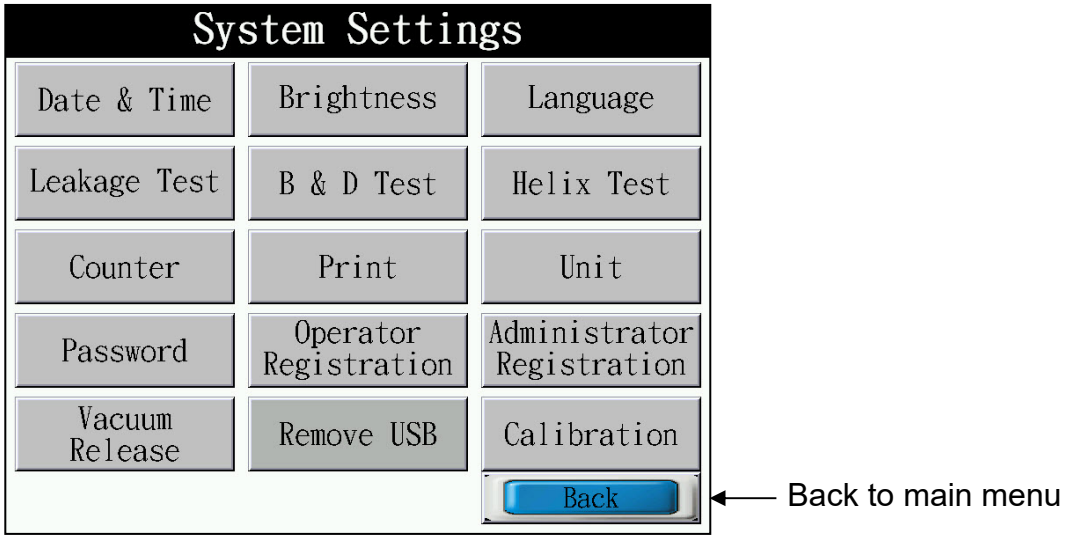


Figure 34

6.3.1 Date & Time Setting

Press “Select “Date & Time “ button to adjust and press “Save” button to quite with save .

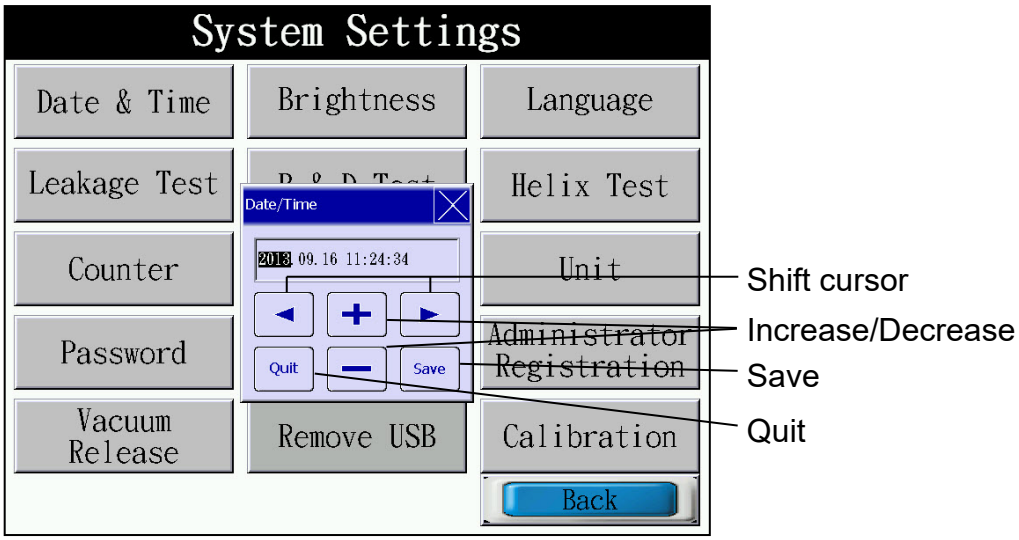


Figure 35

Note: The default date and time are set to UTC+8 zone.

6.3.2 Brightness

Drag the bar to desired position and then close the window to save it.

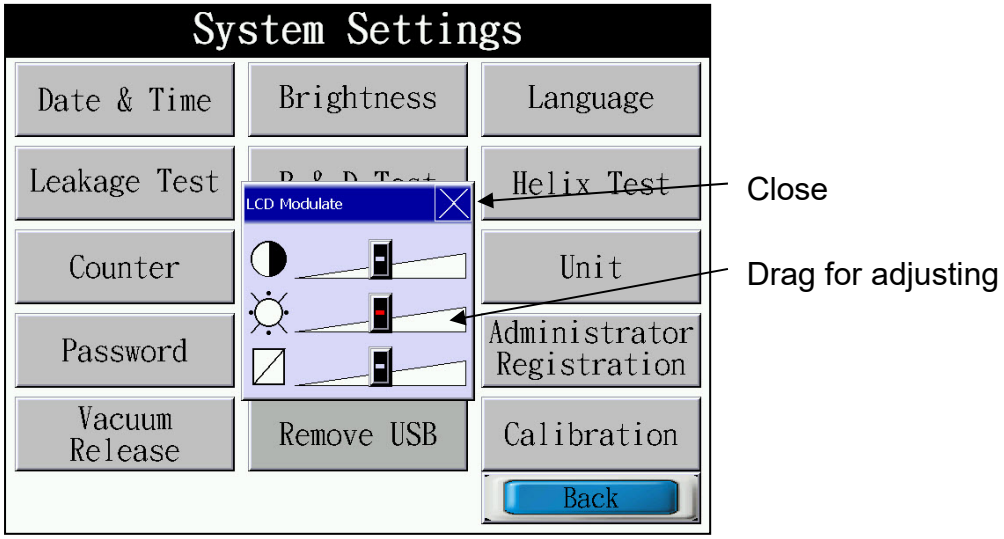


Figure 36

6.3.3 Language change

Select language (Chinese or English)

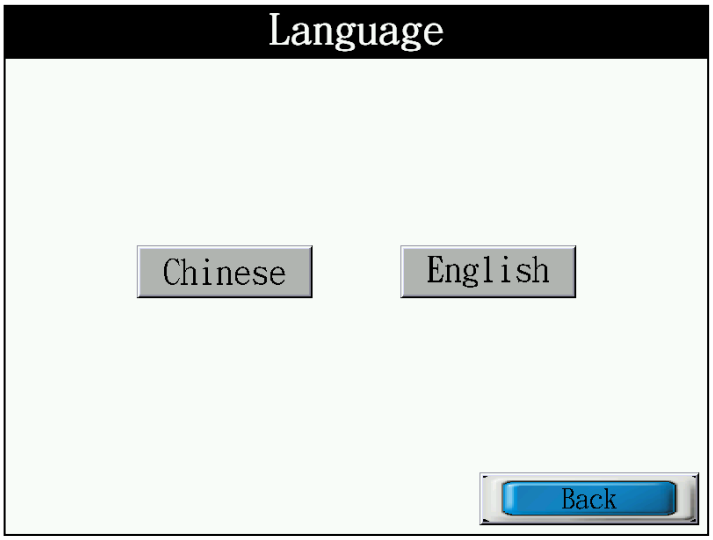


Figure 37

Back: Return to system settings screen.

6.3.4 Leakage test

Press ”Leakage test” icon as shown in Figure 38

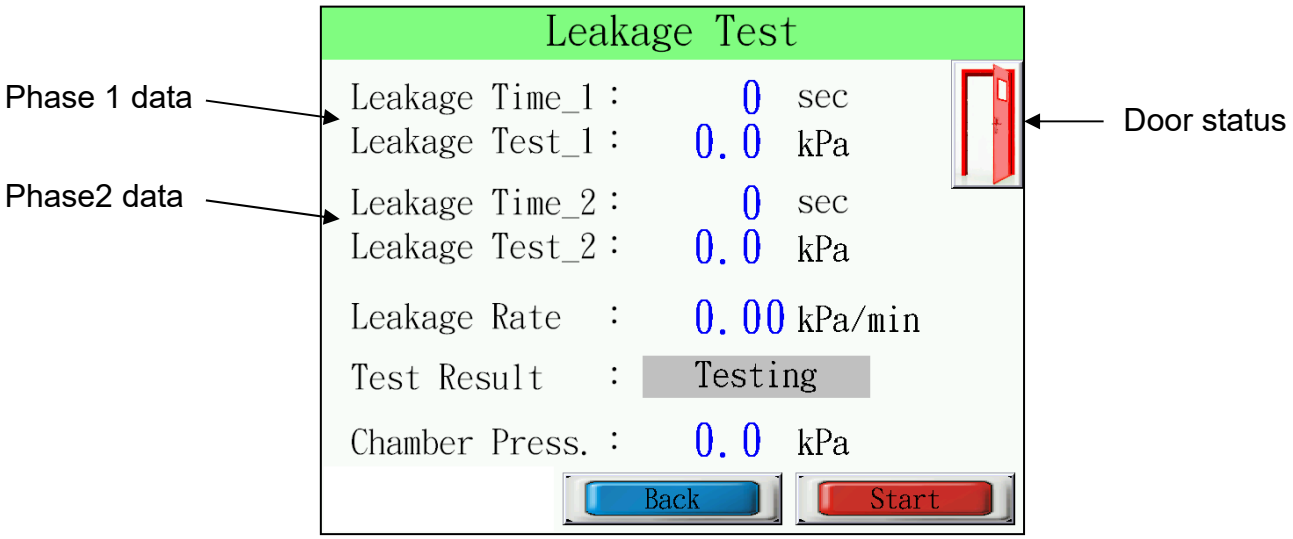


Figure 38

Press ”Start” to start Leakage Test (Figure 39)

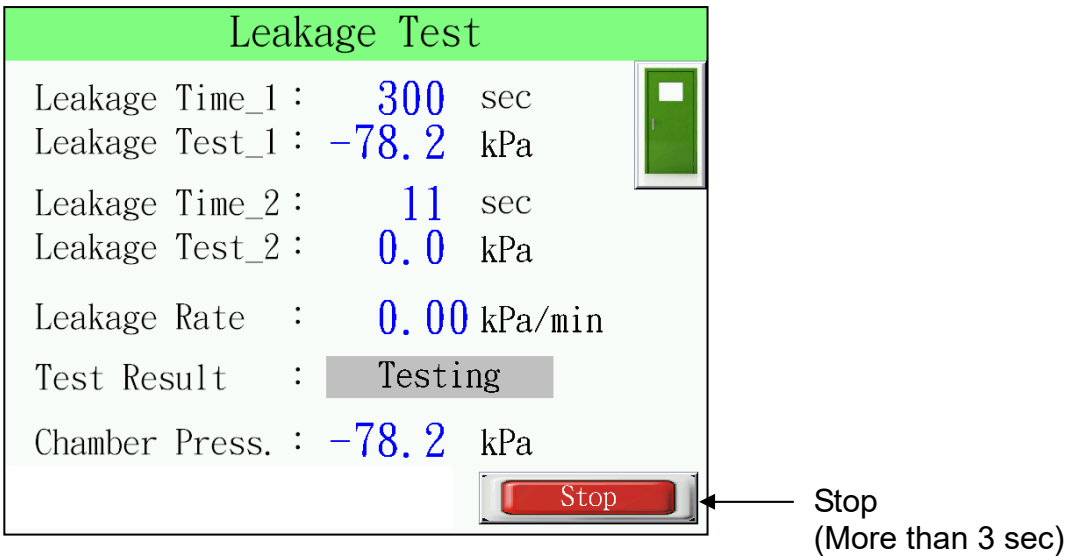


Figure 39

Test Complete screen (Figure 40)

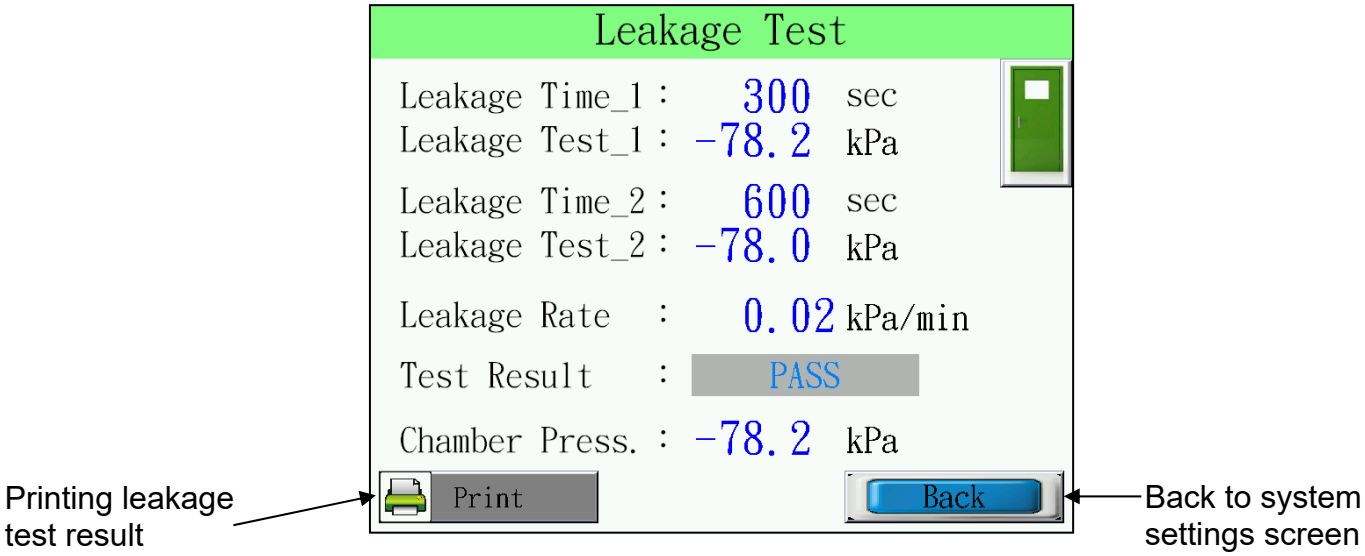


Figure 40

6.3.5 B & D test

Note : Only remove the test fixture from the load side

◎Altitude ≤ 2000M

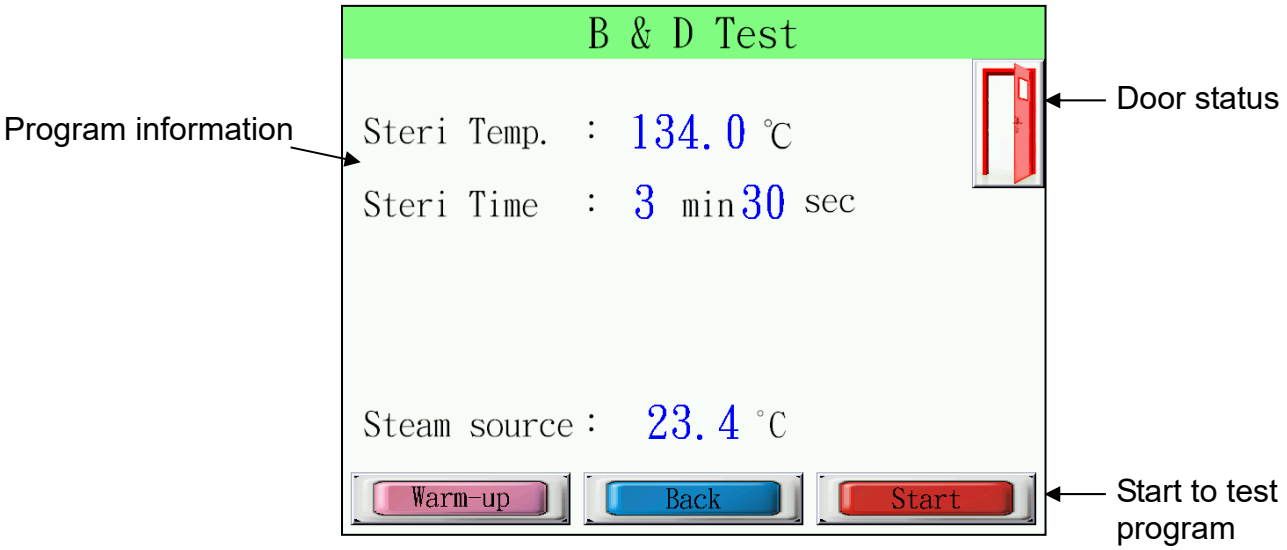


Figure 41

◎Altitude > 2000M

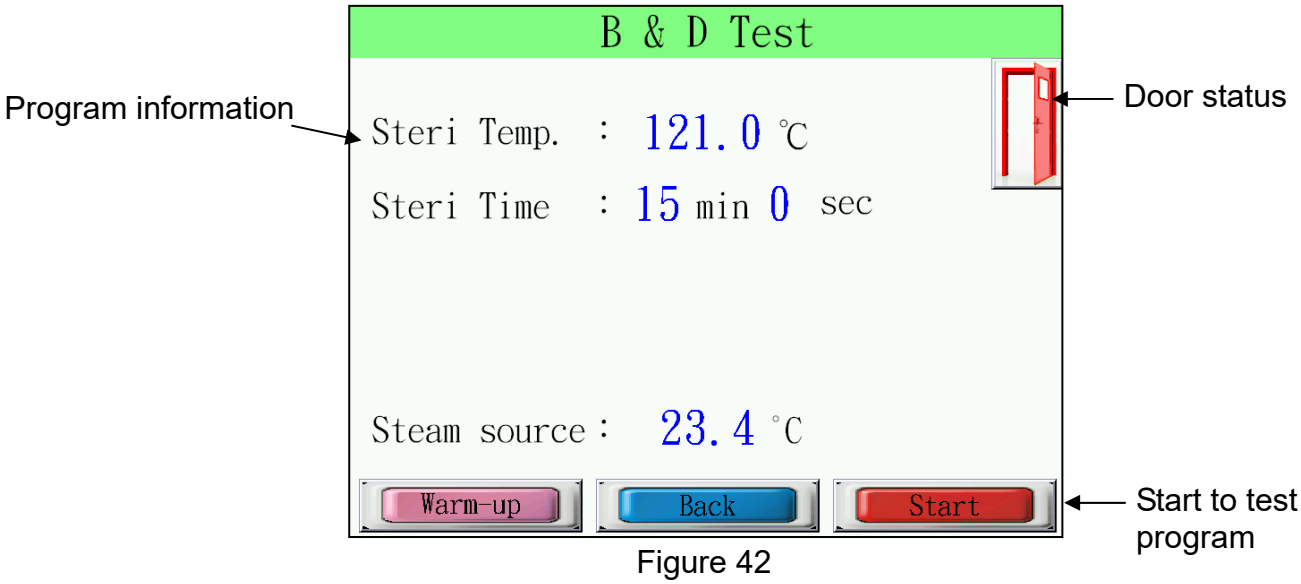


Figure 42

6.3.6 Helix test

Note : Only remove the test fixture from the load side

◎Altitude ≤ 2000M

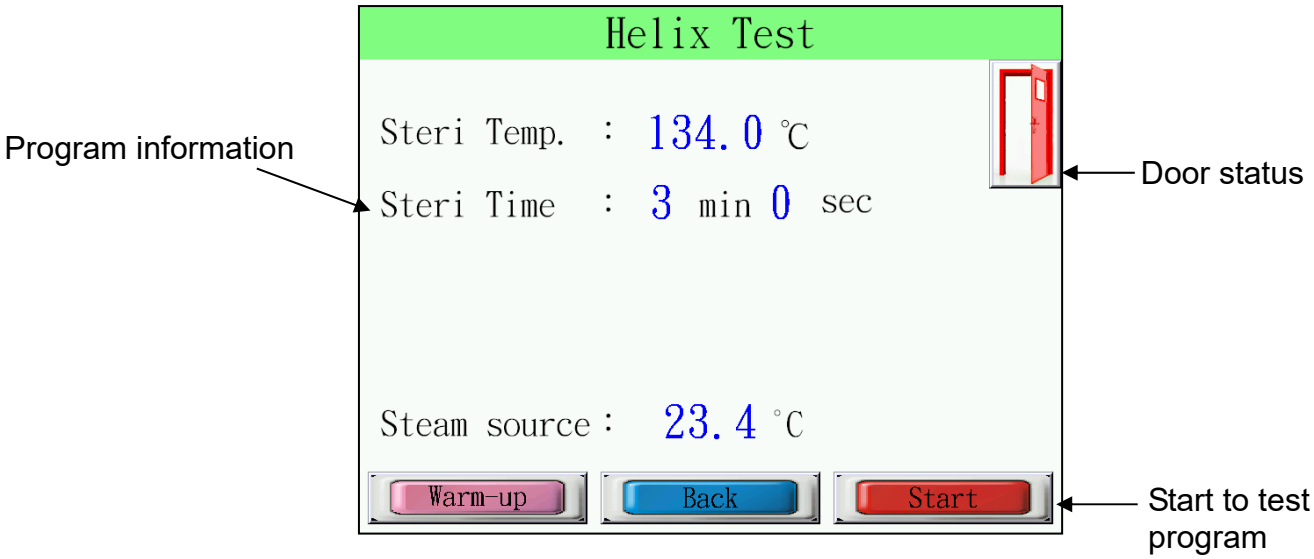


Figure 43

◎Altitude > 2000M

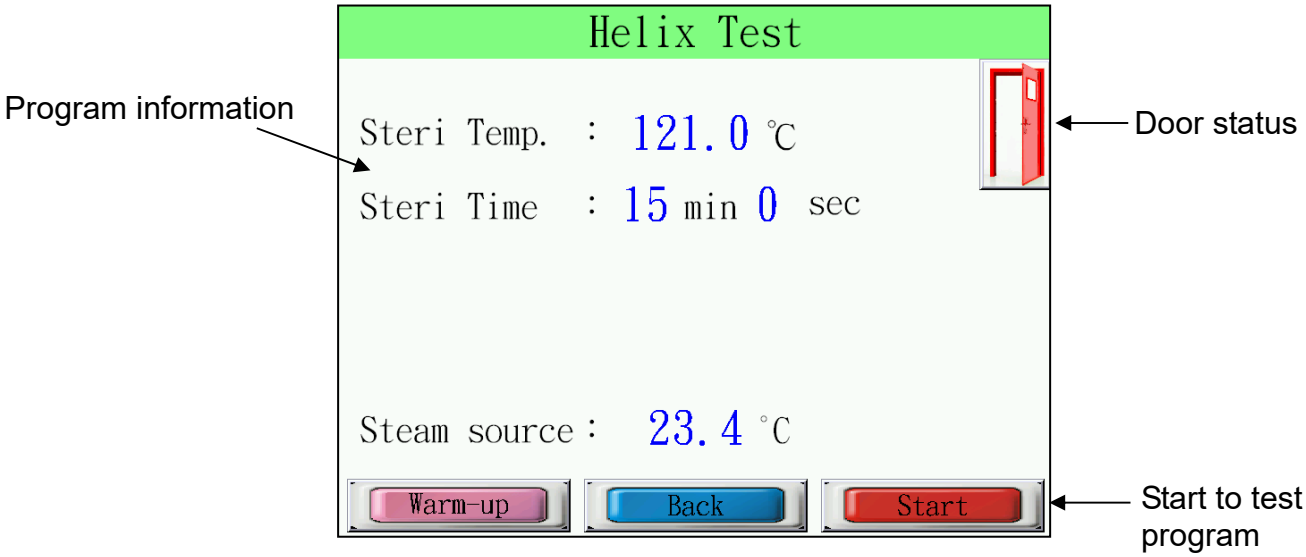


Figure 44

6.3.7 Cycle counter

Cycle counter window display the total operation time, operation counter, and next maintenance counter.

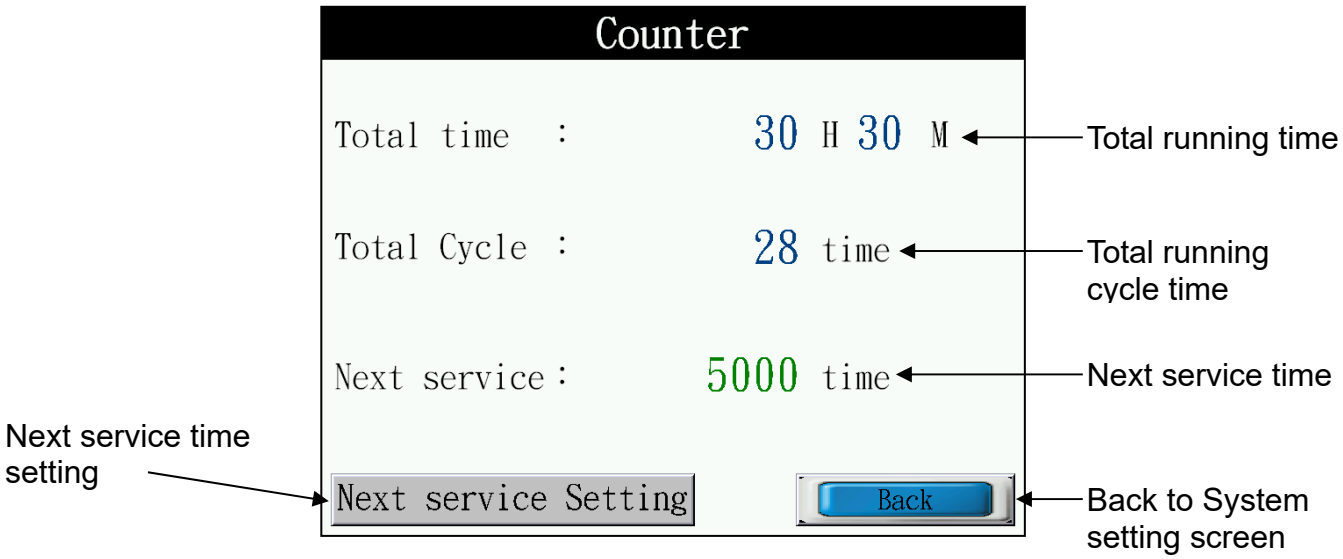


Figure 45

※The next service time default data is 5,000 times.

※Counter setting is Administrator Competence.

6.3.8 Printer

To enable or disable the printing function.

Figure 46

Back: Return to system settings screen.

※The printer setting default data is off.

6.3.9 Unit

Set the unit of pressure.

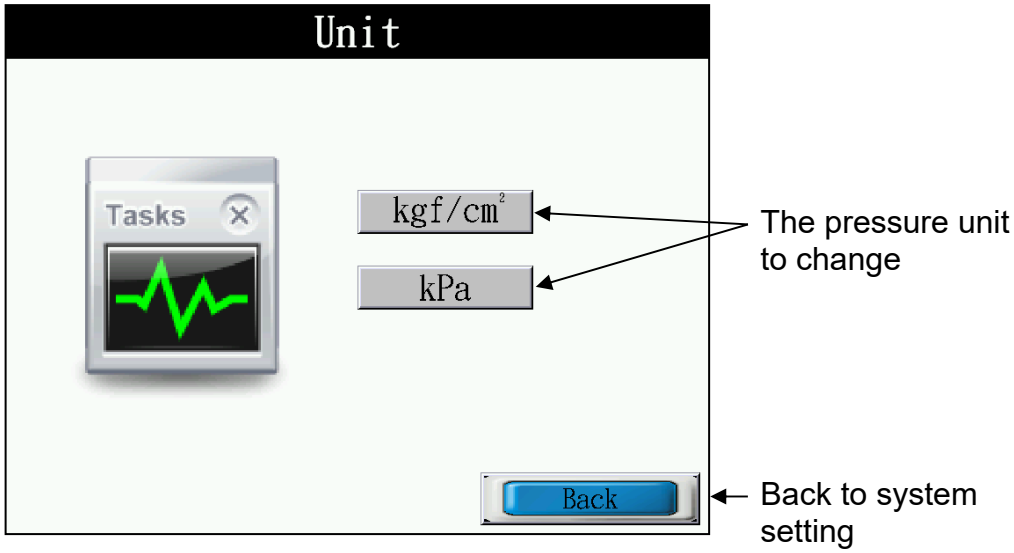


Figure 47

※The unit default data is kgf/cm².

6.3.10 Change password

To change the password of the operator.

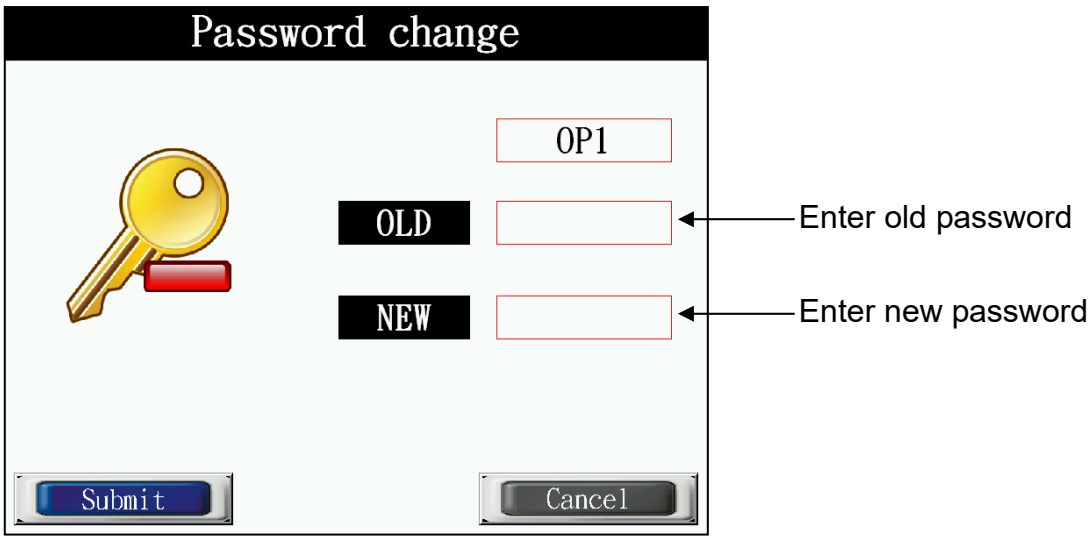


Figure 48

Input present password in the “OLD” column and then input new password; select “Submit” return to previous menu.

You need administrator account for changing the user name is required.

6.3.11 Operator Management

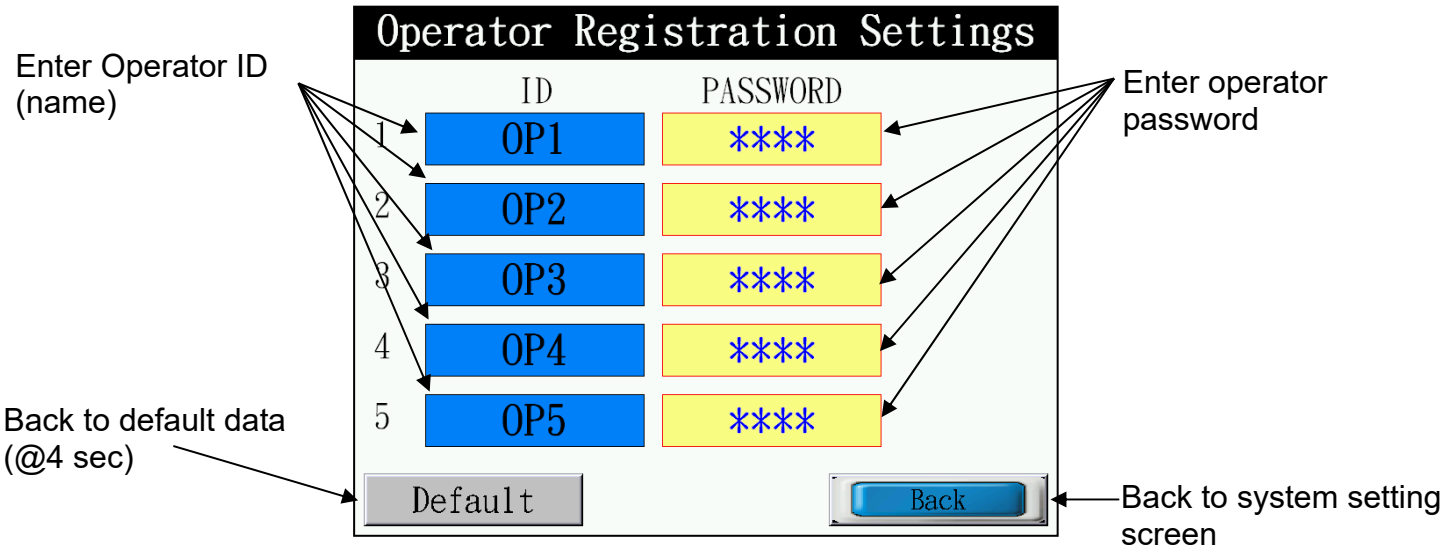


Figure 49

Default：Click ”default” for more than 4 seconds to restore the password to default setting.

Default accounts and passwords:

Account OP1/ password: 0000
Account OP2/ password: 0000
Account OP3/ password: 0000

Account OP4/ password: 0000
Account OP5/ password: 0000

6.3.12 Administrator management

Administrator ID and Password setting.

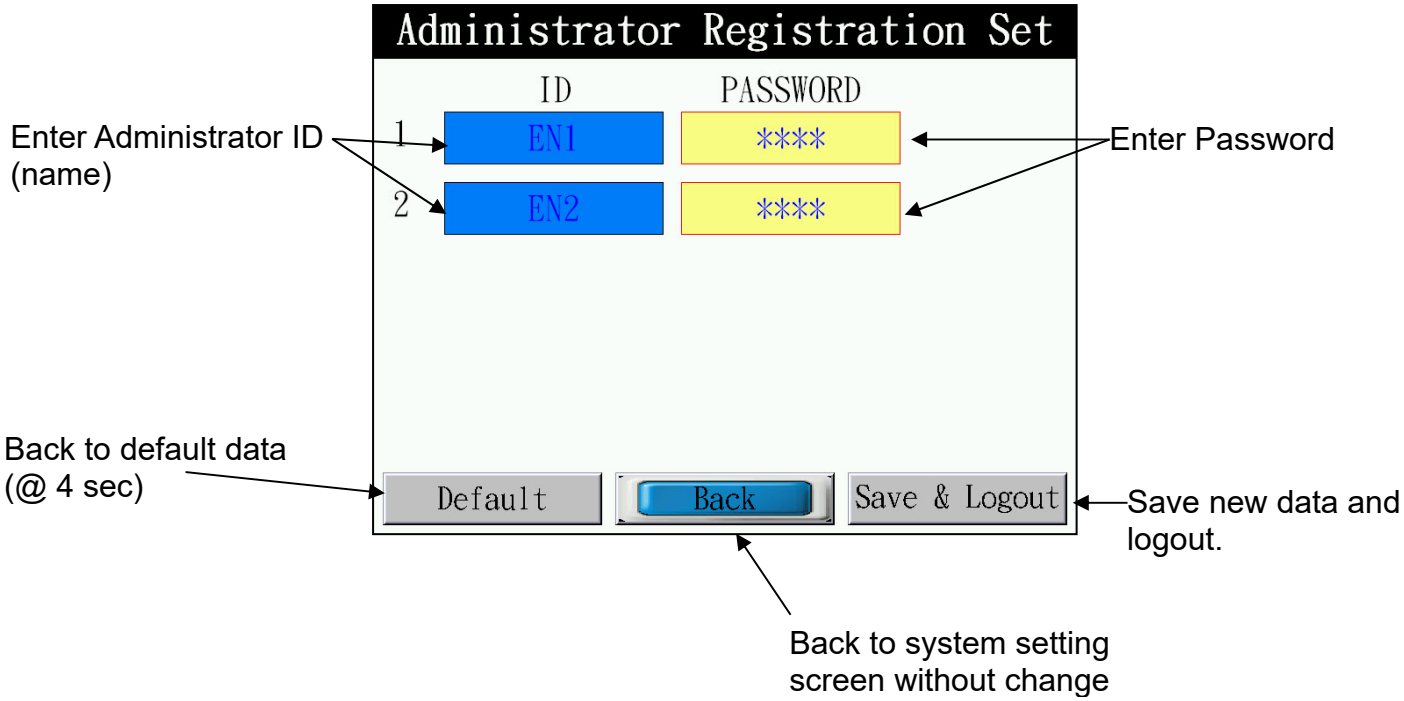


Figure 50

Default：Click ”Default” for more than 4 seconds to reset the password to default setting.

Default accounts and passwords:

Account EN1/ password: 0000
Account EN2/ password: 0000

6.3.13 Vacuum release

To release the vacuum status for opening the door.

6.3.14 Remove USB

To remove the USB device safely.

6.3.15 Calibration

⚠**CAUTION:** This autoclave had been calibrated before shipment, and this Calibration function is password protected to prevent improper operation by the user. Only well-trained personnel can perform the calibration work. Failure to do calibration could result in serious injury or damage to the autoclave. However, the autoclave may need to be re-calibrated if necessary, such as the replacement of components. The following information is aimed for operating by authorized technicians, not by the operator.

Press ”Steam Source Temp. Calibration” icon as shown in Figure 52

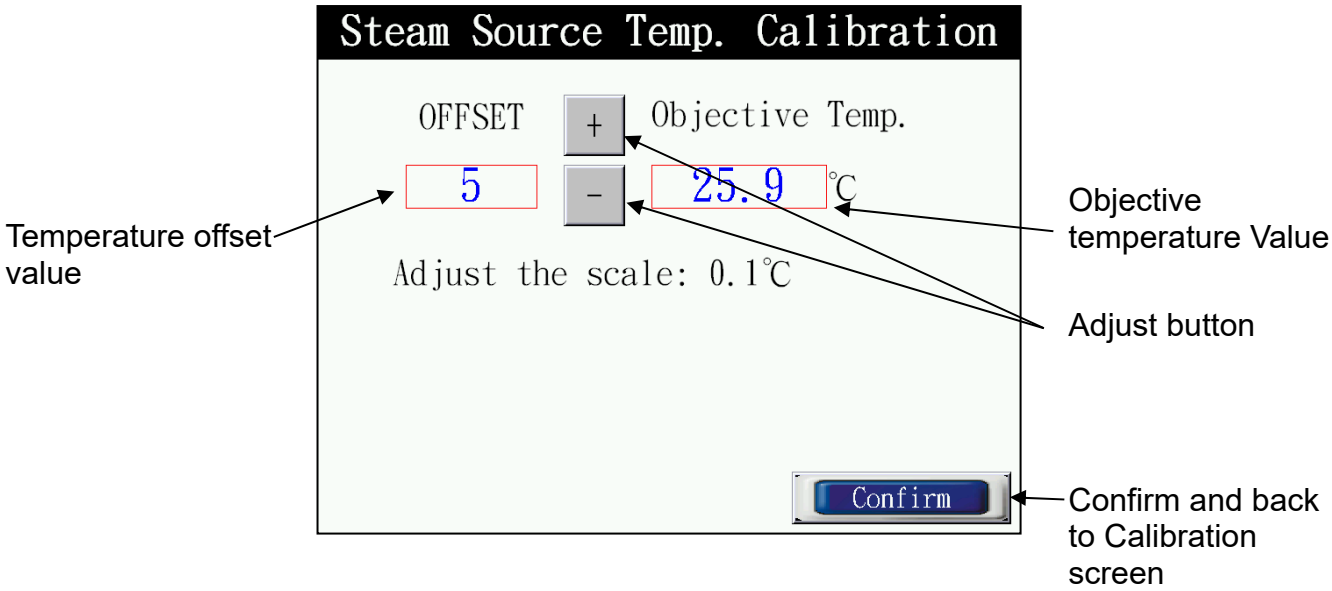


Figure 52

Press ”Chamber Temp. Calibration” icon as shown in Figure 53

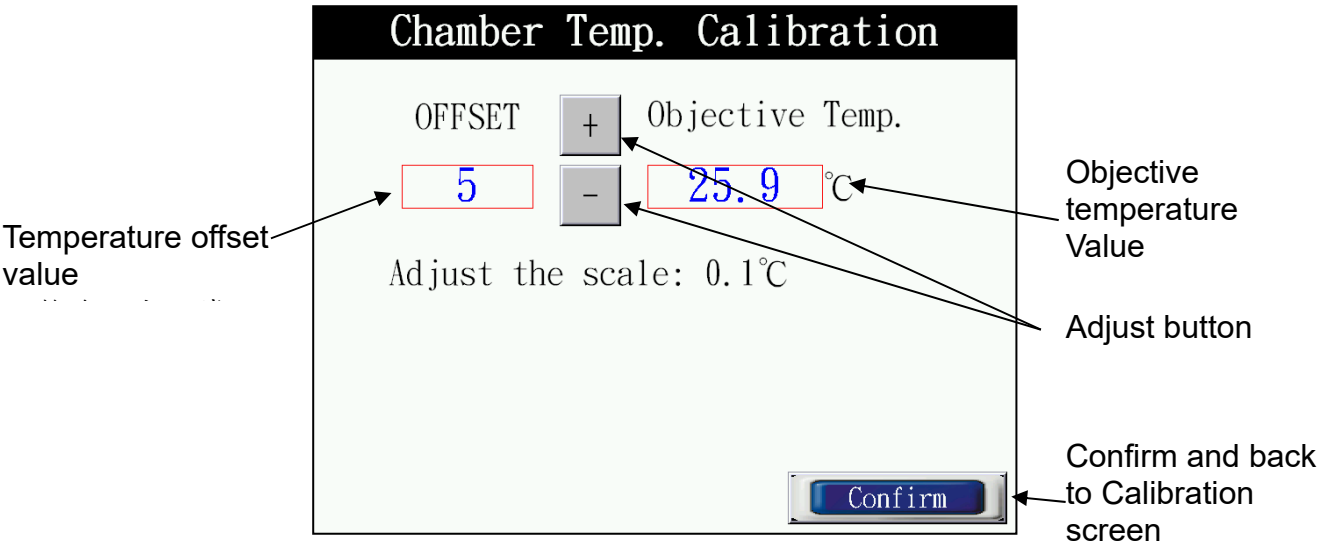


Figure 53

Press ”Chamber Pressure Calibration” icon as shown in Figure 54

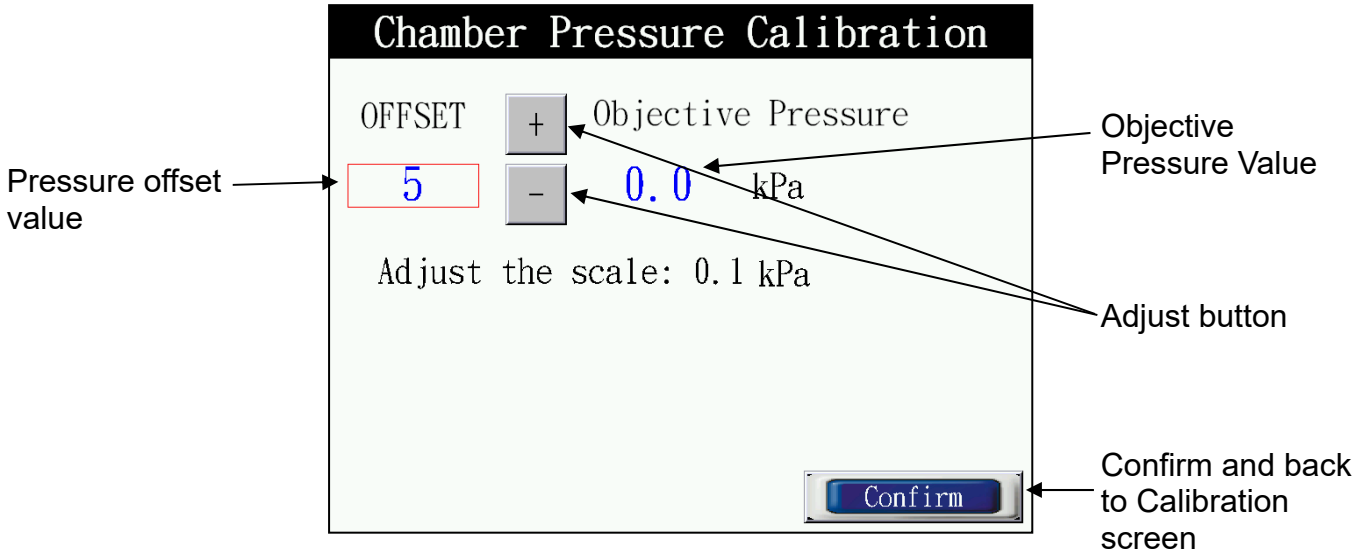


Figure 54

Press ”Environment setting” icon as shown in Figure 55

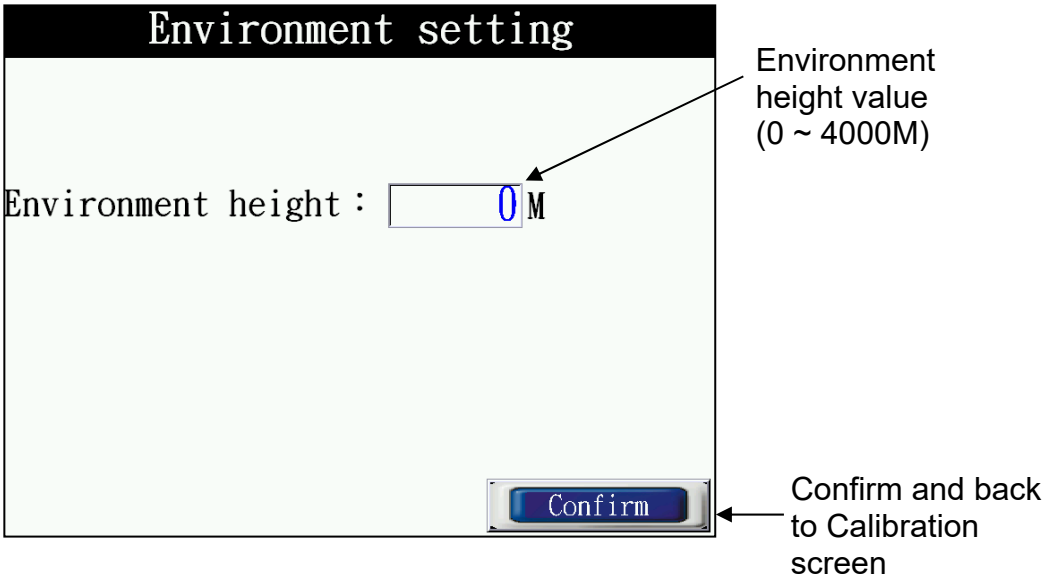


Figure 55

Select the parameter field and enter the parameters.

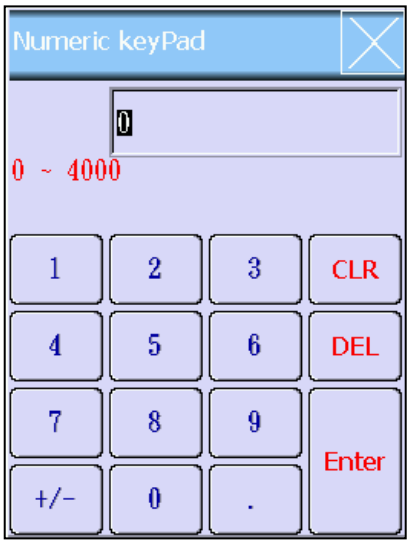


Figure 56

6.4 Prepare Sterilization

A. Follow “4. Installation” to finish installation first.

B. Check the Pressure Gauge is reading ZERO

⚠**Caution:** Before loading, ensure instruments are cleaned and rinsed.

C. Close the door and turn the handle clockwise to lock.

⚠**Note:** Locate suitable indicators for ensuring sterilization works.

D. Press the “POWER” switch to “ON” position

E. Select logging in account.

E.1 Select the suitable program cycle to start sterilization.

	Pre-vacuum (times)	Sterilization duration	Dry duration
Universal 121°C	3	30 minutes 0 second	30 minutes 0 second
Universal 126°C	3	20 minutes 0 second	30 minutes 0 second
Universal 134°C	3	15 minutes 0 second	30 minutes 0 second
Liquid 121°C	0	40 minutes 0 second	0 minute 0 second
Dry	0	0 minute 0 second	1 minute – 60 minutes 59 seconds
Manual	0 - 5	0 second – 60 minutes 59 seconds	0 second - 60 minutes 59 seconds

Table 1

⚠**Note:** Universal 126°C is execution at > 2000M altitude.

⚠**Note:** Universal 134°C is execution at ≤ 2000M altitude.

E.2 On completion, the buzzer will sound and the Program Complete message is displayed.

E.3 Click ”Next Page” for storing records onto a USB, or click return to previous menu. And then you may open the door.

⚠**Warning:** If any error messages prompt, you may need to repeat the sterilization cycle.

E.4 Open the door and take out the sterilized items. Check the status of the indicators. If failed, repeat the cycle. Consult with the qualified technician for calibration if necessary. Please refer to “8. Troubleshooting”.

NOTE: See Table 1 for the parameters of each sterilization program.

Warning: Check the pressure gauge is reading ZERO before opening the door.

Warning: Beware of steam when opening door after a sterilization cycle.

Warning: Be careful when removing the sterilized items as the metal surfaces might still be hot. Always wear suitable hand protection to remove the box or use the appropriate aids (tray holder) to lift the trays.

Warning: Check indicators per sterilization cycle.

Warning: If using the sterilizer continuously, it’s required to have a 20 min. interval between each sterilization cycle, except Dry Program, to allow the unit to cool.

6.5 Placement for Items To Be Sterilized

Please place items to be sterilized on the tray properly in order to have the best sterilization and/or drying result.

⚠**WARNING:** To sterilize absorbent cotton or woolen, please wrap it with sterilizing pouch to avoid piping clog.

⚠**WARNING:** Be careful when removing the sterilized items as the metal surfaces might still be hot. Always wear suitable hand protection to remove the box or use the appropriate aids (tray holder) to lift the trays.

⚠**NOTE:** It is recommended not to exceed 70% of pooch if pooch are used for sterilization.

⚠**WARNING:** If implements are packed with sterilizing pouches, please make sure not to pile them up.

Figure 57

A. Before loading, ensure instruments are cleaned and rinsed.
B. Be sure there will be enough space between each wrap for better air flow as shown in Figure 58.

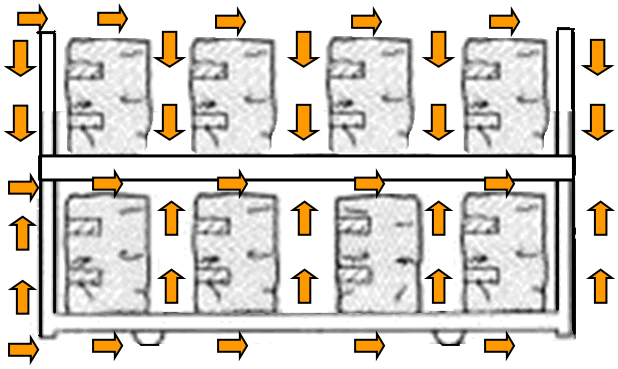


Figure 58

C. If implements are packed with sterilizing pouches and placed inside a sterilization box, make sure to display items as shown in Figure 59.

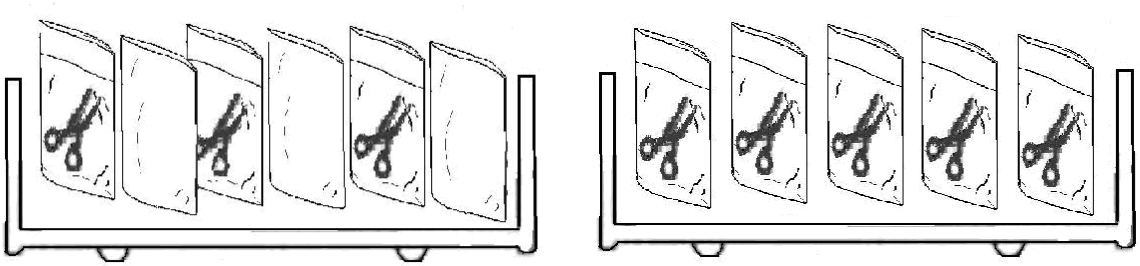


Figure 59

D. If implements are treatment plate, make sure to arrange items as shown in Figure 60.

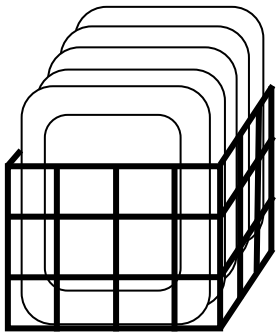


Figure 60

E. If compound items, such as solid loads and porous loads, are packed at the same wrapped, be placed them at the lowest side of the chamber to prevent condensation drops.

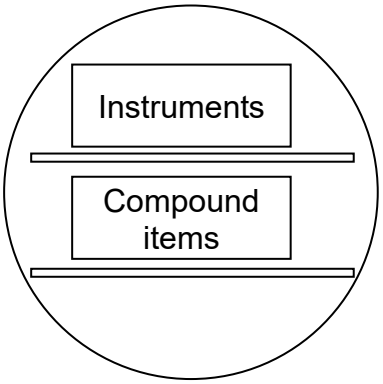


Figure 61

F. Do not exceed to its maximum limit and/or touch the walls of the chamber; and make sure there are enough space for free circulations of steam penetration.

G. Uniform placing of objects that do not overlap.

H. Place tubes or hollows loads horizontal to tray without overlapping. When place sterilizing pouch on the sterilization box or tray, make sure the medical grade paper is facing upward.

I. Round pans, trays, pots pan, etc., should be opening upside down as shown in Figure 62.

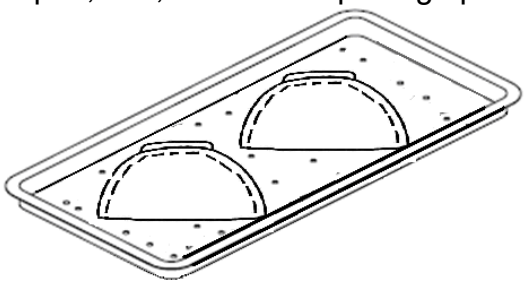


Figure 62

J. Detach caps from can-like items and separated them for sterilization work.

K. If implements are packed with sterilizing pouches, please make sure not to pile them up.

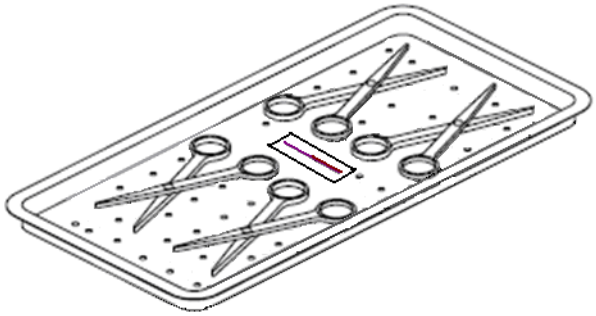


Figure 63

L. Follow the instruction of the instrument to clean and wash the hollow instruments prior sterilizing work, and wipe excess detergents or water. Keep the double ended hollow instrument as straight as possible while keeping two ends opened.

M. An additional temperature sensor and recorder are required for liquid sterilization program as shown in Figure 64.

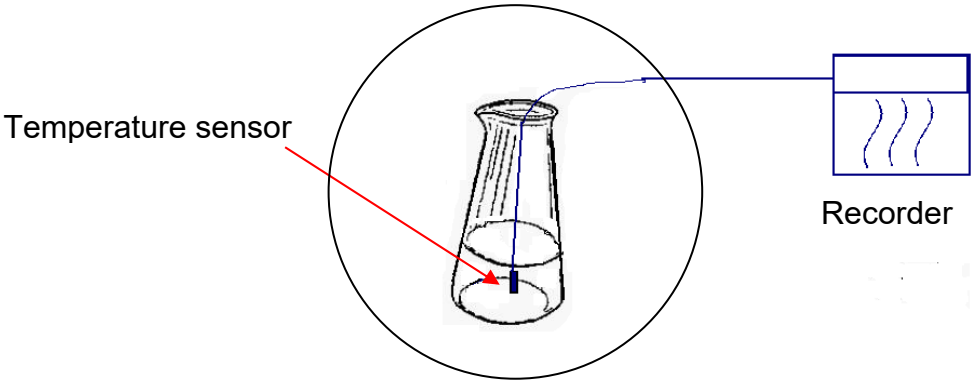


Figure 64

N. Make sure that the items to be sterilized are placed in proper position and then closed the door for sterilization works.

6.6 Stop and Emergency Stop

Stop：Click “STOP” icon for 3 seconds to suspend the current step of a sterilization program. A warning message “026 Stop of operation” will prompt followed by a vacuum release operation, and a “NG” message will be prompt.

Emergency Stop: Press the Emergency Button for 3 seconds during a cycle to stop the program and release the pressure/vacuum. The sterilizer will sound to alert, and the Error message “001 Emergency stop” will be displayed to notify an emergency operation. Please wait till the pressure gauge is reading ZERO.

⚠**Warning:** The Emergency Button can only been pressed when there’s an unusual event or emergency. The sterility of the sterilized items should be verified again.

⚠**Note:** If the Emergency Stop had been pressed, you may report this operation according to the local national regulations, and you may required to check functions of the autoclave.

⚠**Warning:** Disposal of the items which is sterilized by unfinished cycle should be in accordance with the local laws. Do not handle them as general waste.

⚠**Warning:** Check the Pressure Gauge is reading ZERO before opening the door.

6.7 Description of Programs

6.7.1 Program Parameters

Universal 121°C	Vacuum step with 3 vacuum periods, Sterilization temp 121°C, Sterilization pressure 1.06kgf/cm^2(bar) Sterilization time 30 minutes, Dry time 30 minutes. Suitable for general instruments, such as unwrapped metal, wrapped metal, textile, wrapped textile, porous materials, and hollow load.
Universal 126°C	Vacuum step with 3 vacuum periods, Sterilization temp 126°C, Sterilization pressure 1.50kgf/cm^2(bar) Sterilization time 10 minutes, Dry time 30 minutes. Suitable for general instruments, such as unwrapped metal, wrapped metal, textile, wrapped textile, porous materials, and hollow load. ⚠**WARNING:** This program is execution at > 2000M altitude.
Universal 134°C	Vacuum step with 3 vacuum periods, Sterilization temp 134°C, Sterilization pressure 2.07kgf/cm^2(bar) Sterilization time 15 minutes, Dry time 30 minutes. Suitable for general instruments, such as unwrapped metal, wrapped metal, textile, wrapped textile, porous materials, and hollow load. ⚠**WARNING:** This program is execution at ≤ 2000M altitude.
Liquid	Vacuum step without vacuum period, Sterilization temp 121°C, Sterilization pressure 1.06kgf/cm^2(bar) Sterilization time 40 minutes, Dry time 0 minutes. Suitable for liquid load. ⚠**Warning:** DO NOT place alcohol or other flammable items in the sterilizer. An explosion could occur, causing personal injury.

Dry	This dry program is designed for the following purpose: 1) To re-dry the loads. 2) To pre-dry the loads prior to perform a sterilization cycle, in case of the loads may store in a humidity and cold environment. This program is useful especially to the double wrapped loads. Dry time 1 to 60 minutes 59 seconds.
Customization	This function allows the operator to define special sterilization cycle (such as temperature and time) within the specification of this autoclave. Parameters that can be adjusted: Vacuum period: 0-5 times, Sterilization temp:105-135°C,(Altitude ≤ 2000M) 105-132°C,(Altitude > 2000M) Sterilization pressure 0.19~2.15kgf/cm^2(bar) Sterilization time: 0-60 minutes 59 seconds, Dry time: 0-60 minutes 59 seconds. Exhaust mode: Normal or Liquid ⚠**Warning:** Users who define the parameters should take their own responsibilities and obligations to undertaken the risk of sterilization uncertainty.

6.7.2 Sterilization Pattern

A. Universal 121°C Pattern
Sterilization time 30 minutes, Dry time 30 minutes.

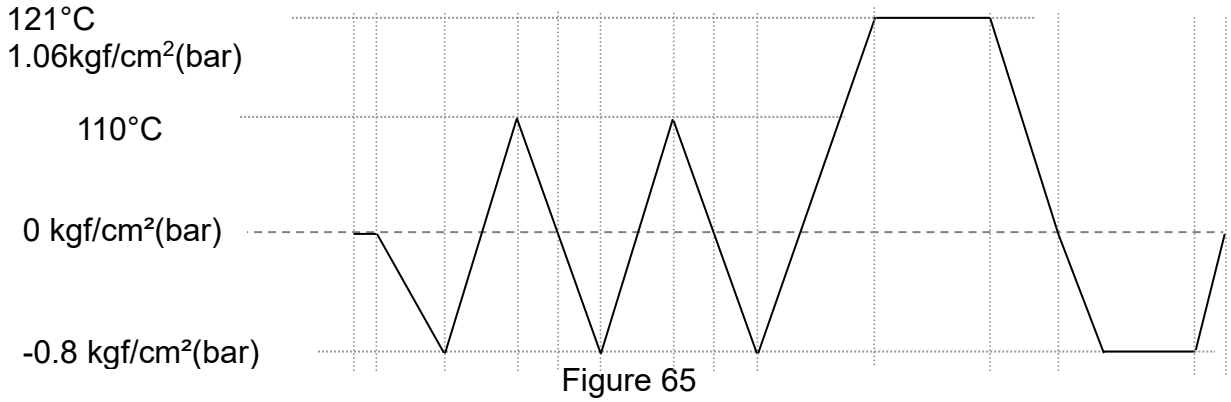


Figure 65

B. Universal 126°C Pattern(This program is execution at > 2000M altitude.)
Sterilization time 10 minutes, Dry time 30 minutes.

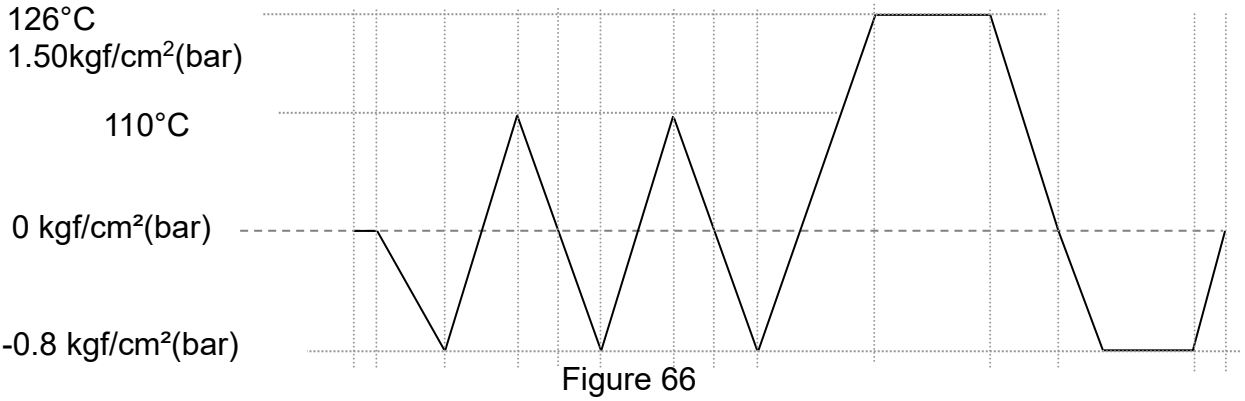


Figure 66

C. Universal 134°C Pattern(This program is execution at ≤ 2000M altitude.)
Sterilization time 15 minutes, Dry time 30 minutes.

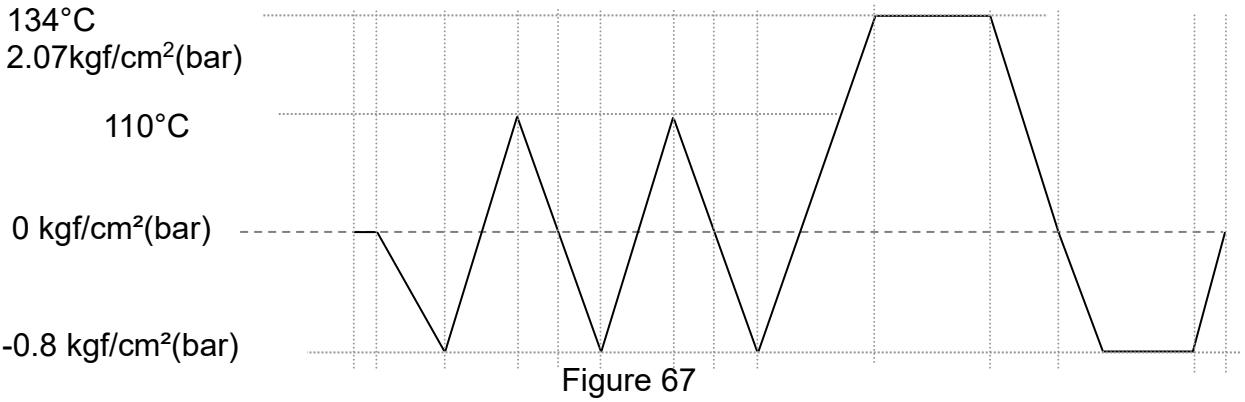


Figure 67

D. Liquid 121°C Pattern
Sterilization time 40 minutes, Dry time 0 minute.

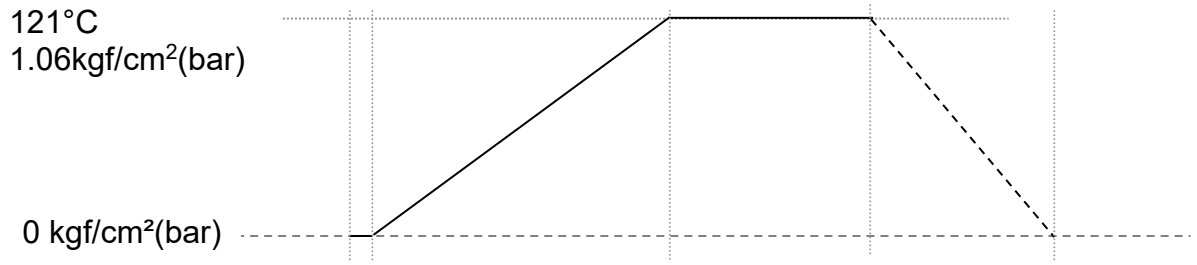


Figure 68

E. Dry Pattern
Dry time 1 to 60 minutes 59 seconds.

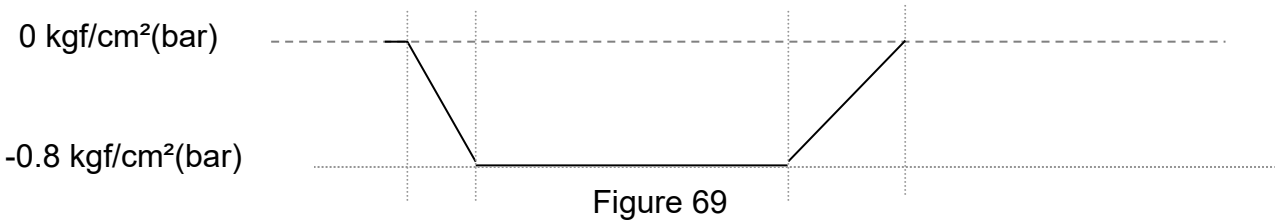


Figure 69

F. Customization Pattern

◎Altitude ≤ 2000M

Vacuum period: 0-5 times,
Sterilization temp: 105-135°C,
Sterilization time: 0-60 minutes 59 seconds,
Dry time: 0-60 minutes 59 seconds.

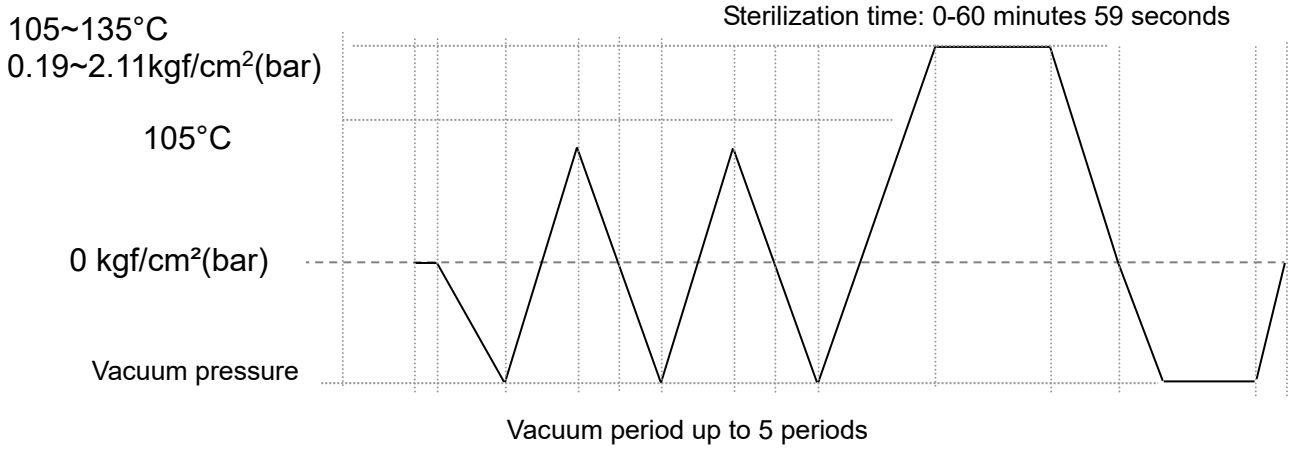


Figure 70

◎Altitude > 2000M

Vacuum period: 0-5 times,
Sterilization temp: 105-132°C,
Sterilization time: 0-60 minutes 59 seconds,
Dry time: 0-60 minutes 59 seconds.

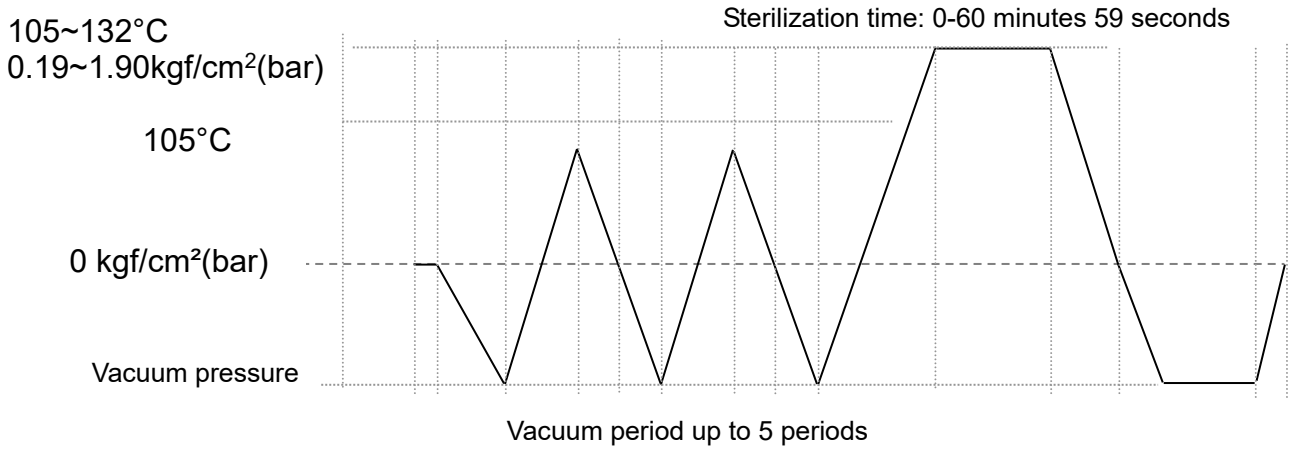


Figure 71

G. B & D Sterilization Pattern

◎Altitude ≤ 2000M

Sterilization temperature 134°C,Sterilization time 3.5 minutes, Dry time 0 minutes

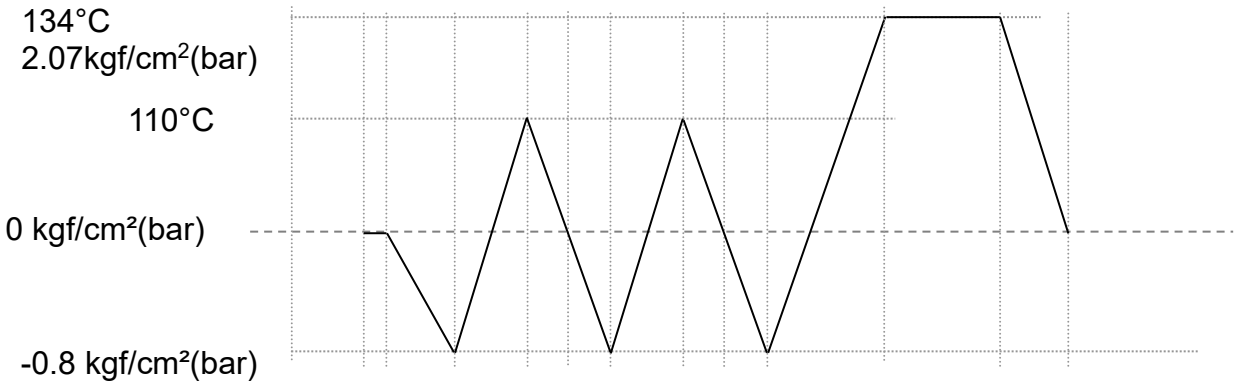


Figure 72

◎Altitude > 2000M

Sterilization temperature 121°C,Sterilization time 15 minutes, Dry time 0 minutes

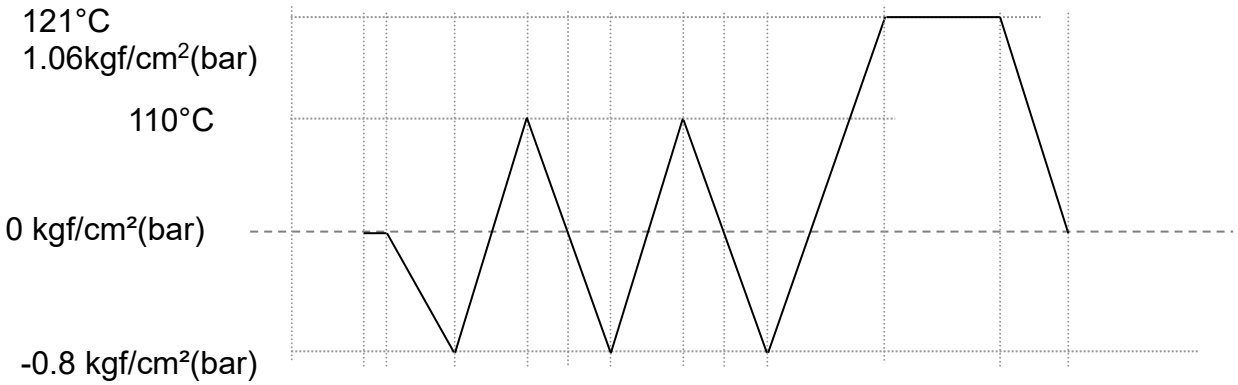


Figure 73

H. Helix Sterilization Pattern

◎Altitude ≤ 2000M

Sterilization temperature 134°C , Sterilization time 3.5 minutes, Dry time 0 minutes

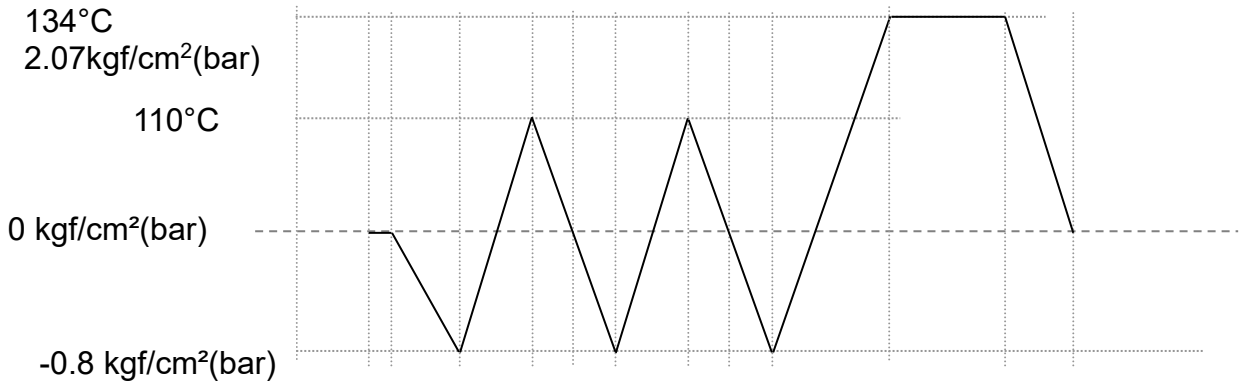


Figure 74

◎Altitude > 2000M

Sterilization temperature 121°C , Sterilization time 15 minutes, Dry time 0 minutes

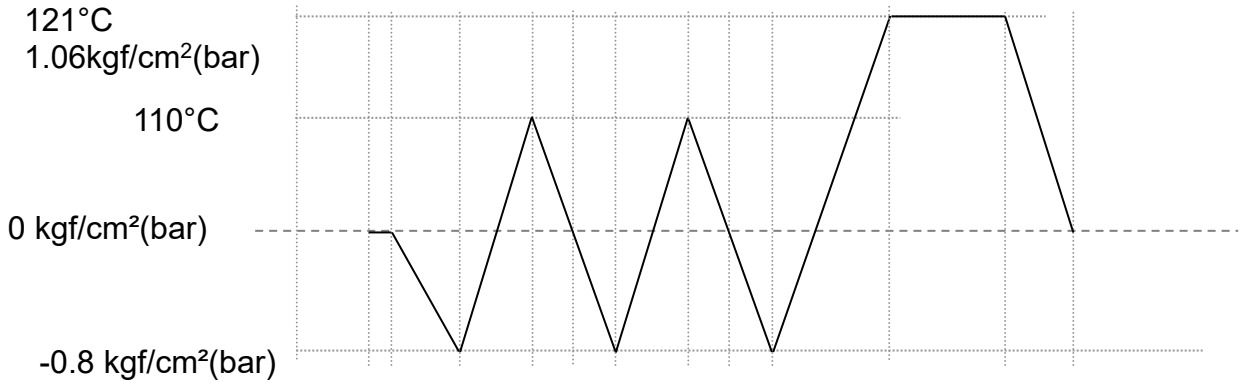


Figure 75

6.8 Printer paper explanation

6.8.1 Printout of Sterilization Program

The following printout is applicable to programs of Universal 121°C/126°C/134°C, Liquid, Manual, Helix test, and B &D test.

Ex.

Printout	Description
Model：SAT-450HP	Model number
Software version：V1.10	Software version
SN：130505204-001	Series number
USER ID：OP2	User identification
Program：Universal 134 °C Pre-Vacuum：3 Ster. Temp：134 °C Ster. Time：15 m 0 s Dry Time： 30 m	Program parameter Pre-vacuum period Sterilization temperature Sterilization duration Dry duration
Date：2013/05/03 08：09：48	Date and Time of sterilization
Cycle Counter ：000351	Cycles that had been started

STEP	Time	Ts	T°C	P(kPa)
Start	000:00	00:00	23.5	1.8
PHeat	019:09	19:09	24.3	2.7
Vac1	020:25	01:16	38.3	-78.5
Heat1	023:07	02:42	105.0	53.7
Vac2	024:11	01:03	78.2	-78.5
Heat2	025:50	00:39	105.0	48.9
Vac3	025:30	00:40	94.4	-78.5
Heat3	025:39	10:09	135.0	211.6
Sterl	035:40	00:00	135.0	211.7
Sterl	036:40	01:00	135.6	216.4
		≈		
Sterl	049:40	14:00	135.2	207.6
Sterl	050:40	15:00	135.2	207.5
Exh	051:53	01:13	105.1	2.0
Dry1	053:53	02:00	92.7	-90.7
Dry1	056:13	02:00	87.2	-82.6
		≈		
Dry1	079.04	02:00	78.5	-82.8
Dry1	081:21	02:00	78.4	-82.9
VR	084:50	02:46	71.9	0.0

Step	action
Time mmm:ss	mmm: minutes starting record, ss: seconds starting record
Ts mm:ss	duration of each step, mm: minutes, ss: seconds
T(°C)	chamber temperature in °C
P(kPa)	chamber pressure in kPa
Start	start time
PHeat	pre-heating of jacket chamber
Vac1	1st pre-vacuum pulse
Heat1	1st heating pulse
Pac2	2nd pre-vacuum pulse
Heat2	2nd heating pulse
Vac3	3rd pre-vacuum pulse
Heat3	3rd heating pulse
Sterl	sterilization time recorded every 1 minute
Exh	exhaust of water and steam
Dry1	dry time
VR	vacuum release

Ster. Temp.： 135.0 ~ 136.4 °C	sterilization temperature
Ster. Pres.： 2.06 ~ 2.88 kgf/cm^2	sterilization pressure
Ster. Time： 15:00	sterilization period
Total Time： 86:01	total time of program
Program：FINISH	end of recording
Signature:_____	Signature office

6.8.2 Printout of Dry Program

Ex.

Printout	Description
Model：SAT-450HP	Model number
Software version：V1.10	Software version
SN：130505204-001	Series number
USER ID：OP2	User identification
Program：Dry No-Vacuum Ster. Temp：0.0 °C Ster. Time： 0 m 0 s Dry Time： 30 m	Program parameter Pre-vacuum period Sterilization temperature Sterilization duration Dry duration
Date：2013/05/07 10：44：06	Date and Time of sterilization
Cycle Counter ：000352	Cycles that had been started
STEP Time Ts T°C P(kPa) Start 000:00 00:00 26.7 0.9 PHeat 019:49 19:49 28.4 1.9 Dry1 021:49 02:00 37.0 -80.8 Dry1 024:04 02:00 87.2 -82.6 ≈ Dry1 048:01 02:00 78.5 -82.8 Dry1 050:38 02:00 78.4 -82.9 VR 051:56 00:55 50.0 -0.3	Step: action Time mmm:ss: mmm: minutes starting record, ss: seconds starting record Ts mm:ss: duration of each step, mm: minutes, ss: seconds T(°C): chamber temperature in °C P(kPa): chamber pressure in kPa Start: start time PHeat: pre-heating of jacket chamber Dry1: dry time VR: vacuum release
Ster. Temp.： 0.0 ~ 0.0 °C	sterilization temperature
Ster. Pres.： 0.0 ~ 0.0 kgf/cm^2	sterilization pressure
Ster. Time： 0:00	sterilization period
Total Time： 51:56	total time of program
Program：----------	end of recording
Signature:_____	Signature office

6.8.3 Printout of Air Leakage

Ex.

<table>
<tr><th>Printout</th><th>Description</th></tr>
<tr><td>Model：SAT-450HP</td><td>Model number</td></tr>
<tr><td>Software version：V1.10</td><td>Software version</td></tr>
<tr><td>SN：130505204-001</td><td>Series number</td></tr>
<tr><td>USER ID：OP2</td><td>User identification</td></tr>
<tr><td>Program：Leakage Test</td><td>Program parameter</td></tr>
<tr><td>Date：2013/05/16　08：04：06</td><td>Date and Time of sterilization</td></tr>
<tr><td>Cycle Counter　：000353</td><td>Cycles that had been started</td></tr>
<tr><td>Leakage Time_1: 300　sec
Leakage Test_1: -80.0　　kPa

Leakage Time_2: 600　sec
Leakage Test_2: -75.0　　kPa

Leakage Rate: 0.50 kPa/min
Leakage Result: PASS</td><td>
<table>
<tr><td>Step</td><td>action</td></tr>
<tr><td>Leakage Time_1</td><td>start of the leakage period</td></tr>
<tr><td>Leakage Test_1</td><td>pressure after a period of 300 s</td></tr>
<tr><td>Leakage Time_2</td><td>end of the test</td></tr>
<tr><td>Leakage Test_2</td><td>pressure after a leakage time of 600 s</td></tr>
<tr><td>Leakage Rate</td><td>leakage rate</td></tr>
<tr><td>Leakage Result</td><td>test result</td></tr>
</table>
</td></tr>
<tr><td>Signature:_____</td><td>Signature office</td></tr>
</table>

6.9 Record data Explanation

6.9.1 File formality

The following printout is applicable to programs of Universal 121°C/126°C/134°C, Liquid, Dry, Manual, leakage test, Helix test, and B &D test.

The file recording mode to record every 1-3 seconds.

Time	Date	Chamber Temp. (°C)	Chamber Pressure(kPa)	Jecket Temp. (°C)
10:05:15	07/04/2013	30.9	0.2	33.1
10:05:16	07/04/2013	30.9	0.2	33.1
10:05:17	07/04/2013	30.9	0.2	33.1
10:05:18	07/04/2013	30.9	0.2	33.1
10:05:20	07/04/2013	30.9	0.2	33.1
10:05:21	07/04/2013	30.9	0.2	33.1
10:05:22	07/04/2013	30.9	0.2	33.1
10:05:23	07/04/2013	30.9	0.2	33.1
10:05:24	07/04/2013	30.9	0.2	33.1
10:05:25	07/04/2013	30.9	0.2	33.1

Time：Time of recorded, hh：mm：ss
Date：Date of recorded, MM/DD/YYYY
Chamber Temp. (°C)：Temperature recorded of chamber, the unit is °C
Chamber Pressure(kPa)：Pressure recorded of chamber ,the unit had kPa and kgf/cm^2 to select.
Jacket Temp. (°C)：Temperature recorded of Jacket, the unit is °C

6.10 Error table

Press “Error Table” button enter to record the error message.

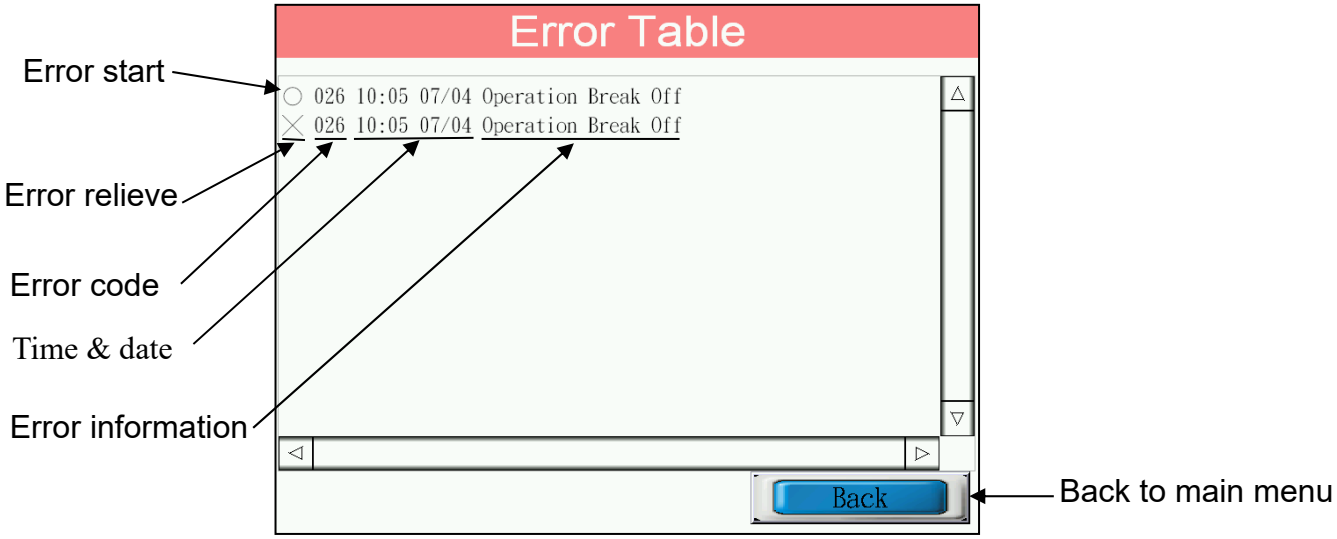


Figure 76

※The Error Message check to chapter “8. Troubleshooting”

7. Maintenance Instructions

Warning: Before conducting maintenance, please turn off the sterilizer and disconnect from the power supply. Check the sterilizer has cooled down to room temperature.

Warning: Make sure that pressure gauge is reading ZERO before opening the door.

Caution: Before conducting maintenance, confirm that the chamber is empty without loads.

Correct and regular maintenance is required to optimize the performance of the sterilizer. Failure to follow the Maintenance Instructions will adversely affect performance and lifespan of the sterilizer.

7.1 Daily

- Clean the external surfaces with soft cloth.
  Note: Use only quaternary disinfectants to clean the units. Use of alcohol cleaner containing substantial of alcohol in the formula may damage the faceplate.
- Wipe the inside of the chamber, door and the gasket with a damp, lint-free cloth.
- Check the status of the power cord. Call for service if breakage comes up.

7.2 Weekly

- Clean the box, tray frame and trays with detergent, or a non-corrosive stainless steel cleaner and water, using cloth or sponge.
- Clean the drain filter in the chamber.

7.3 Monthly

- Replace the distilled water in steam generator:
  Clink Pre-Heat icon to start the heating until the jacket pressure gauge to 0.4 kgf/cm^2, and then shut down the power, followed by opening the valve below the steam generator to drain the water and its pressure.

7.4 Annually

⚠**Caution:** An annual maintenance service by a trained engineer is necessary. Contact your distributor for details. The following maintenance instructions are for your reference only.

- Check if the water filter to be cleaned or replaced.
- Check if all wiring, connections and fuses are broken.
- Check if there’s any leakage or corrosion of the piping.
- Calibrate the temperature during sterilization process.
- Check if the Process Status Indicator lights are functioning normally.
- Check the working status of steam trap, safety valve, and heater.
- Check the water sensor every 3 months.
- Check if the silicone door gasket is chapped or worn. Silicone door gaskets are consumable parts, replace the silicone door gasket every year is recommended.

-

7.4.1 How to Clean Steam Generator's water level sensor

⚠ **Warning**: Danger of Electric Shock! Disconnect the power prior to the maintenance works.

A. Mark and record the wiring number for subsequent reinstallation works. Do not mix the High-Level-Sensor, Low-Level-Sensor and Ground sensors.

B. Disconnect the three wirings counter-clockwise by using a No. 10 wrench (or an adjustable wrench), as shown in Figure 77.

C. Loosen the two sensors nuts (High-Level-Sensor and Low-Level-Sensor) counter-clockwise by using a No. 27 wrench (or an adjustable wrench), and then loosen the Ground screw nut counter-clockwise by using a No. 17 wrench (or an adjustable wrench).

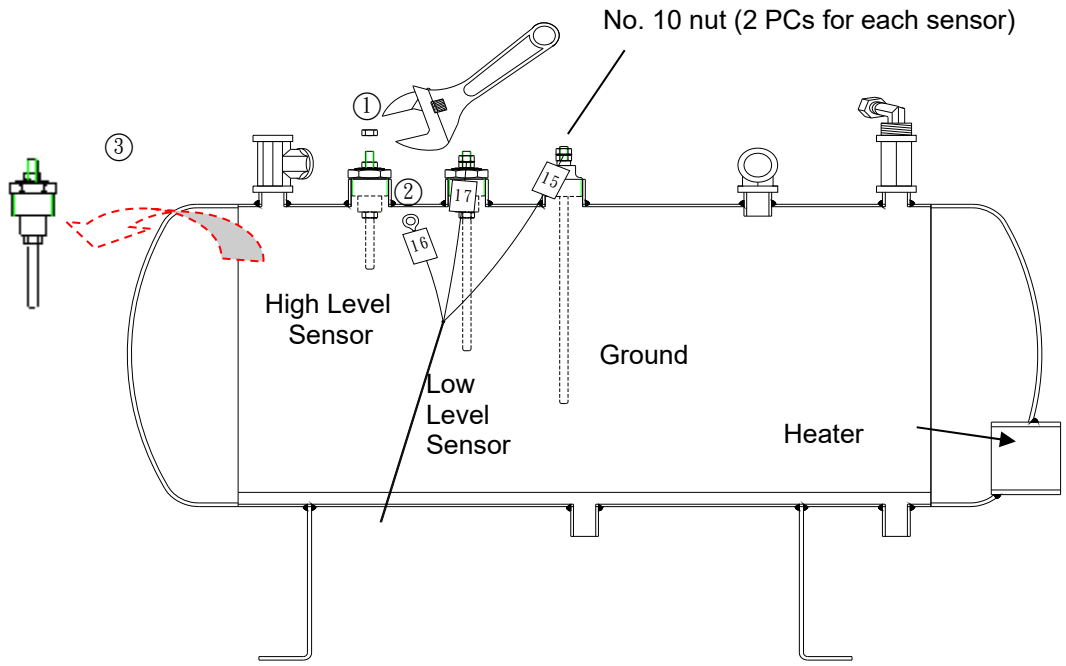


Figure 77

D. Disassemble the High-Level-Sensor and Low-Level-Sensor as shown in Figure 78 and Figure 79.

E. Clean each part very careful to remove the scale and deposit with clean water, a small brush or scrub sponge may help to the cleaning works. Also clean the Ground Sensor Rod as described above.

⚠ **Note:** Each part must be clean completely; there should be no dirt on the surface of the Teflon Insulator.

F. Dry all of the components after the cleaning work. Wrap the screw thread of the High-Level-Sensor and Low-Level-Sensor rods (Figure 79) with sealing tape so that they can be tighten with Teflon Insulators.

G. Assemble the components as shown in Figure 79 and Figure 80.

H. Install the three sensors and their associated wiring with the tools used in step 1. Visual inspect that the position and wiring identification are match to Figure 80.

I. Restore the power.

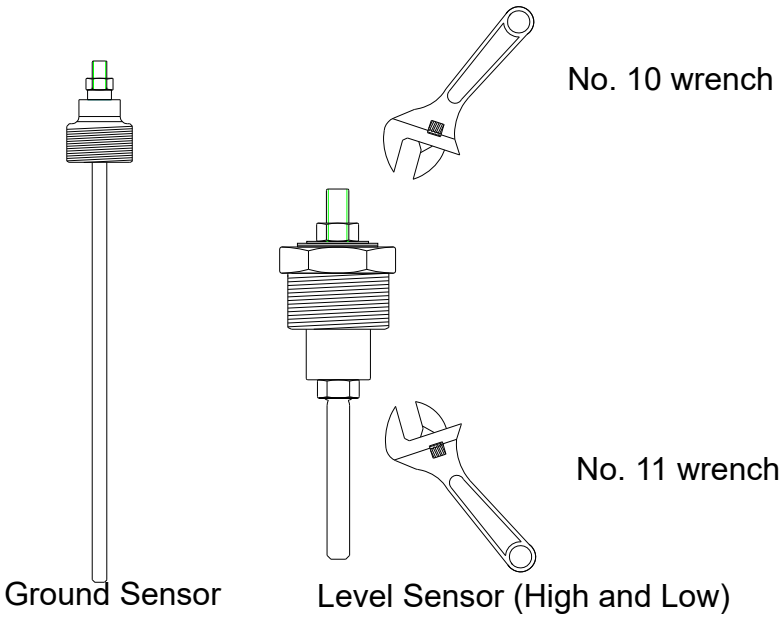


Figure 78

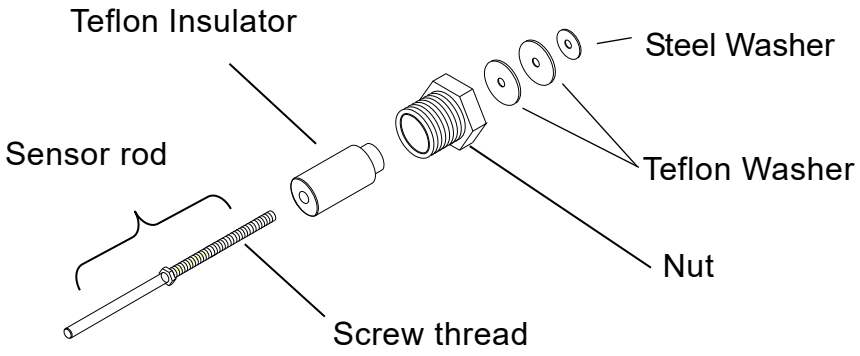


Figure 79

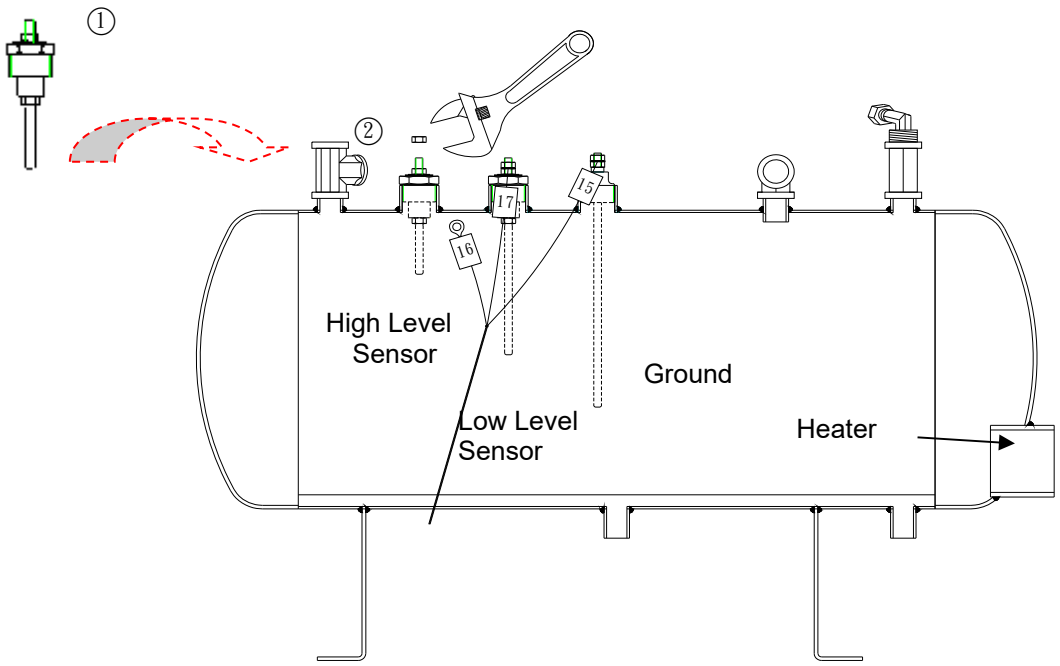


Figure 80

Note: Ensure that the earth is connected securely.

7.4.2 Replace Gasket

⚠**Caution:** The replacement work should be carried out by a trained engineer.

- Silicone door gaskets are consumable parts, replace the silicone door gasket every year is recommended.

A. Remove the old gasket from the door, and then take out the gasket o-ring from the gasket.

B. Install the gasket to the door groove by using a non-sharp tool to push the gasket into the door groove as shown in Figure 81 and Figure 82.

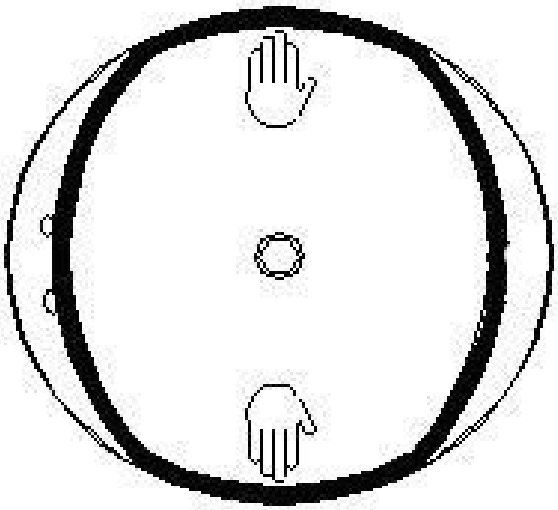


Figure 81

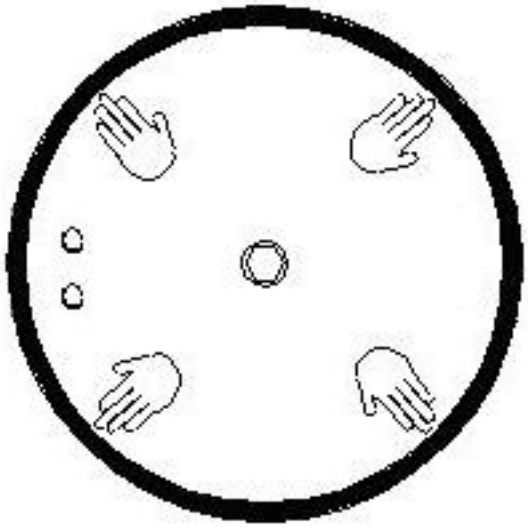


Figure 82

⚠**Caution:** The old gasket should be disposed in accordance with the local laws.

7.4.3 Replace Printer Ribbon

A. Turn off power.

B. Pull out of the printer and push outward the clip to remove front cover as show in Figure 83.

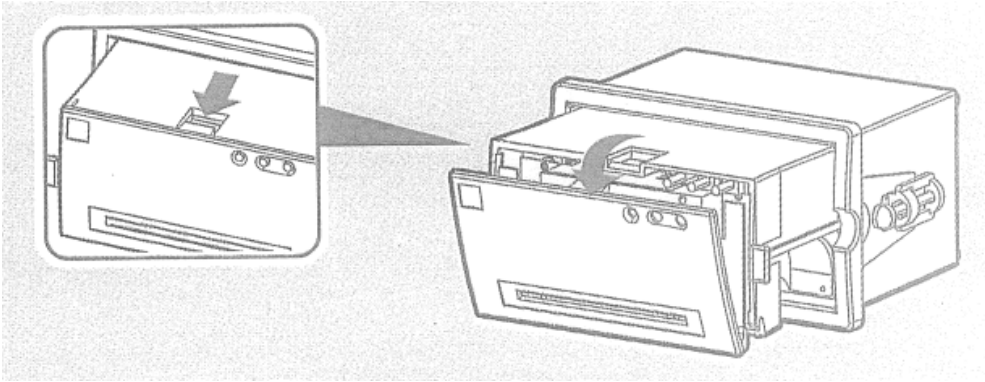


Figure 83

C. Take out the ribbon as show in Figure 84

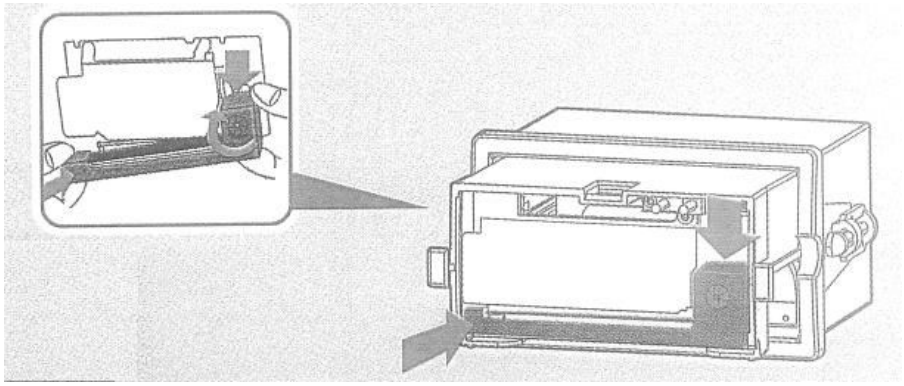


Figure 84

D. Install a new ribbon of the printer.

E. Re-assemble the front cover to the printer and push the printer in position.

7.4.4 Change printer paper

Paper supplied： 57 mm in wide, φ_{out} 30 mm ,φ_{in} 8 mm

A. Turn off power, pull out of the printer and remove the paper-roller as show in Figure 85

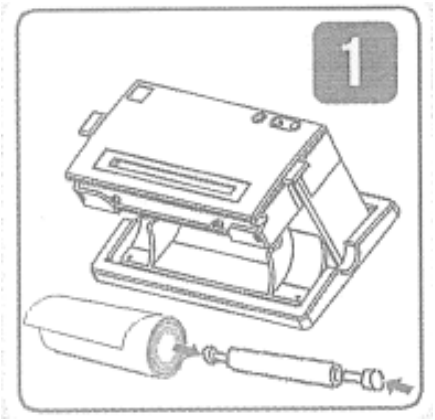


Figure 85

B. Install a new paper on the printer-roller. (remove the old paper-roller prior installed a new one if there exist.)

Figure 86

C. Locate both sides of the paper-roller in slots, and then pull the paper into the outlet of the printer.

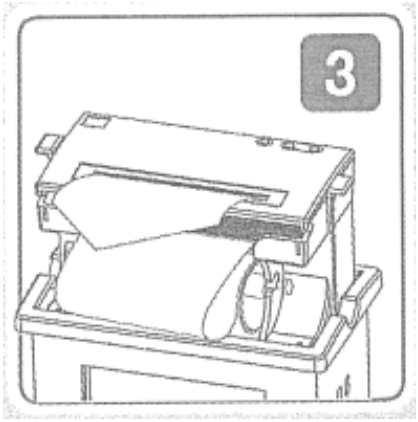


Figure 87

D. Turn on the power, press “SEL” button to disable the indicator. Press “LF” button for feeding the paper. Check if the paper is feeding correctly. Press “SEL” button again to enable printing function.

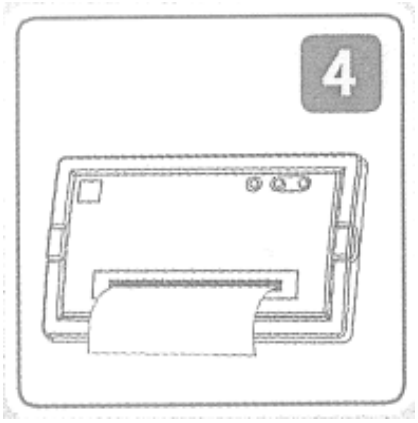


Figure 88

8. Troubleshooting

Alarms and concerns are classified in sections related to potential sources, and are organized by alarm code similarly to integrated diagnostic functions displayed on the sterilizer error table.

Error Code	Error message
001	Emergency stop
002	Service time over
003	Limitation of continue operation
004	Over Temperature of Chamber (sensor)
005	Over pressure of the chamber (pressure switch)
006	Over pressure of the chamber (pressure sensor)
007	Over heat of the heater
008	Over heat of the Steam generator
009	Over pressure of the Jacket (steam generator) (Pressure switch)
010	Steam generator heating up fault
011	Vacuum release fault
012	Vacuum fault
013	Heating up and Ster. Temp. fault
014	Sterilization Fault
015	Sterilization temperature too high
016	Sterilization temperature too low
017	No water
018	Low water level
019	Exhaust fault of the jacket
020	Exhaust fault of the chamber

021	Exhaust fault of the chamber (liquid)
022	Door open (load side)
023	Door open (unload side)
024	Mode select fault
025	Insufficient water
026	Stop of operation

Error Message	Possible Causes	Actions
No power	1. No power	Check power and connect power.
	2. Power switch OFF	Turn power ON.
	3. Fuse blow	Check if there is any short-circuit, replace a new same one.
	4. Fault of switch	Replace a new same one.
Low water level	1 Insufficient water	Check if the water supply being shut down.
	2. Sensor detector dirty	Cleaning sensor required, consult your service agent.
	3. Solenoid fault	Consult your service agent.
Steam leaks from the door	Dirty or worn silicone door gasket	Clean the silicone door gasket. If the silicone door gasket was used over one (1) year, please follow “7.4 ” to replace it.
Door cannot be opened	Vacuum chamber	1. Release the vacuum status. 2. Consult your service agent.
	Pressure persists inside chamber	1. Press emergency button to open the door. 2. Consult your service agent.
Over heat or over pressure	1.No water in the jacket chamber	1. Check the water level. 2. Clean the water level sensor, consult your service agent. 3.Check if there is any leakage, consult your service agent.
	2.Over pressure in the jacket chamber	Check the temperature of the jacket chamber, consult your service agent.
	3. .Over pressure in the chamber	Check the temperature of the chamber, consult your service agent.

Error Message	Possible Causes	Actions
Low pressure	1. Solenoid fault	Clean solenoid or consult your service agent.
	2. Heater fault	Consult your service agent.
	3. Continue leakage	1. Steam trap fault, consult your service agent. 2. Pipe leakage, consult your service agent.
Can't release vacuum after completing sterilization cycle	Exhaust solenoid error	Clean pipe or solenoid, or replace a new solenoid.
Leakage test fault	Piping leakage Chamber door leakage	Check or clean piping's parts about solenoid valve or check valve. Clean door gasket or replace a new one.
Steam trap can't exhaust	1. abnormal function of steam trap 2. Leakage of steam trap	1. Clean the steam trap. 2. Replace a new one.
Error 001	Emergency stop	1) The EMERGENCY button was pressed to interrupt the program. Please wait until the pressure been release to 0 reading and then open the door. 2) The sterility of the sterilized items should be verified again. 3) Consult your service agent for maintenance service as soon as possible.
Error 002	Service time over	1) The default 5,000 cycles or preset service cycles have been reached. 2) You can press any key to continue your operation, but this message will be displayed every time to remind service. Consult your service agent for maintenance service as soon as possible.
Error 003	Limitation of continue operation	1) A minimum time interval of 20 minutes between the end of a sterilization work and the start of a new one, to prevent overheating of the autoclave. 2) Press any icon to continue, and your sterilization work will start automatically after the preset time reached.
Error 004	Over Temperature of Chamber (sensor)	Check temperature sensor or controller. Consult your service agent.

Error Message	Possible Causes	Actions
Error 005	Over pressure of the chamber (pressure switch)	Check pressure switch. Consult your service agent.
Error 006	Over pressure of the chamber (pressure sensor)	Check pressure sensor. Consult your service agent.
Error 007	Over heat of the heater	Check jacket temperature sensor or controller. Consult your service agent.
Error 008	Over heat of the steam generator	Check jacket temperature sensor or controller. Consult your service agent.
Error 009	Over pressure of the jacket chamber (steam generator) (Pressure switch)	Check pressure switch or water supply. Consult your service agent.
Error 010	Steam generator heating up fault	Check heater. Consult your service agent.
Error 011	Vacuum release fault (solenoid)	Clean solenoid or consult your service agent.
Error 012	Vacuum fault (vacuum pump)	Check valve, water source for vacuum pump. Consult your service agent.
Error 013	Heating up and Ster. Temp. fault	Clean solenoid or consult your service agent.
Error 014	Sterilization fault	Interrupt of a sterilization cycle, or consult your service agent.
Error 015	Sterilization temperature too high	Consult your service agent.
Error 016	Sterilization temperature too low	Consult your service agent.
Error 017	No water	No supply water; check and clean water level sensor; consult your service agent.
Error 018	Low water level	Check and clean water level sensor; consult your service agent.
Error 019	Exhaust fault of the jacket	Check and clean water level sensor; consult your service agent.
Error 020	Exhaust fault of the chamber	Exhausting time too long; clean solenoid or consult your service agent.
Error 021	Exhaust fault of the chamber (liquid)	Exhausting time too long; clean solenoid or consult your service agent.
Error 022	Door open (load side)	Close the door of load side to reset the error message.
Error 023	Door open (unload side)	Close the door of unload side to reset the error message.
Error 024	Mode select fault	Shut down the machine and restart it again.

Error Message	Possible Causes	Actions
Error 025	Insufficient water	Check and supply water to the steam generator, and then restart again.
Error 026	Stop of operation	Restart the sterilization cycle.

⚠**WARNING:** Contact local distributor for service. DO NOT disassemble the sterilizer by yourself if the symptoms still exists, as explosion and scald may occur.

9. Water Quality

Contaminants in feed water supplied to a dedicated steam generator

Determinant	Feed water
Residue on evaporation	≤ 10 mg/l
Silicate (SiO_2)	≤ 1 mg/l
Iron	≤ 0,2 mg/l
Cadmium	≤ 0,005 mg/l
Lead	≤ 0,05 mg/l
Rest of heavy metals except iron, cadmium, lead	≤ 0,1 mg/l
Chloride (Cl')	≤ 2 mg/l
Phosphate (P_2O_5)	≤ 0,5 mg/l
Conductivity (at 25 ° C)	≤ 5 S/cm
pH value (degree of acidity)	5 to 7,5
Appearance	Colorless clean without sediment
Hardness (Σ Ions of alkaline earth)	≤ 0,02 mmol/l
NOTE：Compliance should be tested in accordance with acknowledged analytical methods.	

10. Specifications

Cylindrical Model

Model No.		SAT-450HP	SAT-500HP	SAT-600HP
External Dimensions (mm) (W) x (H) x (D)		850 x 1800 x 1350	850 x 1800 x 1450	930 x 1900 x 1680
Chamber Size (mm) (ø) x (D)		450 x 900	500 x 1000	610 x 1200
Chamber Capacity (L)		143 L	196 L	350 L
Supply Voltage		3 ø 230V – 440V AC, 50/60 Hz		
Heater		9 kW	9 kW	12 kW
Total Power		13kW	13 kW	16 kW
Materials		SUS 304		
Design Temperature		142°C		
Design Pressure		2.82 bar (kgf/cm²)		
Standard		ASME		
Working Pressure/Temperature		0.15 bar (kgf/cm²) (105°C) to 2.16 bar (kgf/cm²) (135°C)		
Max. Load Capacity	Wrapped	22 kg(11kg/per tray)	30 kg(15kg/per tray)	53 kg(26.5kg/per tray)
	Unwrapped	30 kg(15kg/per tray)	41 kg(20.5kg/per tray)	73 kg(36.5kg/per tray)

Max. Water Consumption (Liter / cycle)	5	7	13
Safety Valve	Chamber：2.55 - 2.6 kgf/cm². (250.1 - 255.0 kPa) Jacket：2.7 - 2.8 kgf/cm². (264.8 - 274.6 kPa)		
Pressure Display	Analog type Panel Display		
Control	PLC		
Panel	7” color touch panel		
Water Supply	Automatically Water level detection (steam generator)		
Sterilization Program	Universal 121°C Universal 126°C(altitude > 2000M) Universal 134°C(altitude ≤ 2000M) Liquid Vacuum Dry 1-60 minutes Customization: Pre-vacuum/Sterilization Temperature/Sterilization Time/Exhaust/ Dry Time		
Test Program	Leakage Test B&D Test Helix Test		
Lifespan	7 years		

Safety Protection	1.Emergency Stop 2.Safety Valve 3.Jacket Safety Valve 4.Pressure Sensor 5.Jacket Pressure Sensor 6.Heating Control 7.Low-Water detection 8.Door open detection 9.Door interlock
Standard accessory	Tray Base x 1 Glass Tube x 2 Printer Paper x 1
Storage medium	USB (up to 32GB)
Printer	Digital Dot-Printer (Paper size：30mm(ϕ) x 57mm)
Login	Operators x 5 Administrators x 2
Others Function	Date and time setting, Panel Brightness, Language (Chinese/English), Printer, Unit Setting Calibration Mode/Engineering Mode, Next Service cycles remind, Vacuum, Administrator mode

Optional accessory	Add Water Pump： “W” Double Door Device: “D” Single Channel Recorder (Analogue) ： “X” 6 Channels Recorder (Analogue) ： “Y” Sensor for Liquid Sterilization(Requires recorder “X” or “Y”) Trolley with Loading Plate (Rail Included) Baskets Plate Set
Working Environment	● Indoor use; ● Under 4,000m (altitude); ● Temperature 5°C to 40°C; ● Relative Humidity 80%RH@31°C to Relative Humidity 50%RH@40°C; ● Voltage fluctuation ±10 %; ● Transient overvoltages category II; ● Pollution degree 2
Storage Conditions	-10°C to 50°C, 10%RH to 70%RH
Transportation Conditions	-10°C to 70°C, 10%RH to 90%RH

Note: Please set the environment height according to the section 6.3.15 Calibration.

Note: Universal 126°C is execution at > 2000M altitude.

Note: Universal 134°C is execution at ≤ 2000M altitude.

WARRANTY

Your "**STURDY**" product has a one (1) year guarantee of defective in materials and workmanship under normal use from the date of purchase.

This warranty does not apply to any product damaged by accident, misuse, abuse, neglect, improper line voltage, drop, fire, flood. Or the products were altered or repaired by anyone other than qualified service personnel.

The liability of Sturdy Industrial Co., Ltd. is limited to repair of replacement and under no circumstances shall "**STURDY**" be liable for any collateral consequential damages or loss. This guarantee specifically excludes the expendables and consumable.

All warranty claims must be directed to the distributors or agents authorized by Sturdy Industrial Co.,Ltd. whom are responsible for the sales of this equipment. The customers are responsible for shipping expense.

User's Name: _____

Address:

_____

Country: _____ Tel: _____ Fax:_____

Date of Purchase: _____ Model No.:_____

Series No.: _____

Distributor:

Manufacturer: Sturdy Industrial Co.,Ltd. (ISO 13485 Certified)

Name	Sturdy Autoclave Sterilizer
Model	SAT-HP series
Manufacturer	Sturdy Industrial Co. Ltd.
Address	No. 168, Sec. 1, Zhongxing Rd., Wugu District, New Taipei City, 24872, Taiwan
EC Representative EC REP	APEX MEDICAL S.L. Elcano 9, 6 ª planta 48008 Bilbao. Vizcaya SPAIN