



Autoclave Sterilizer

SA-300FA Instruction Manual

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




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1. Important Safety Instructions

In order to clearly indicate the extent of the harm, loss or damage which may result from failing to heed these precautions and the degree of their urgency, the precaution have been classified into the three categories of Danger, Warning and Caution.

-  **Danger :** This indicates an imminently hazardous situation arising from the mishandling or mis-operation of the unit which, if not avoided, might cause the death or serious injury of the operator or other persons.
-  **Warning :** This indicates a potentially hazardous situation arising form the mishandling or mis-operation of the unit which, if not avoided, might cause the death or serious injury of the operator or other persons.
-  **Caution :** This indicates a potentially hazardous situation arising form the mishandling or mis-operation of the unit which, if not avoided, may cause the minor injury of the operator or other persons and property damage.

 **Warning:** 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.

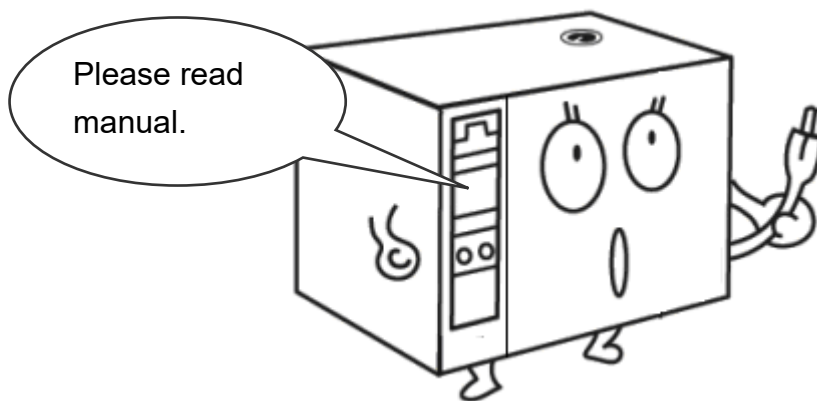



Figure 1

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

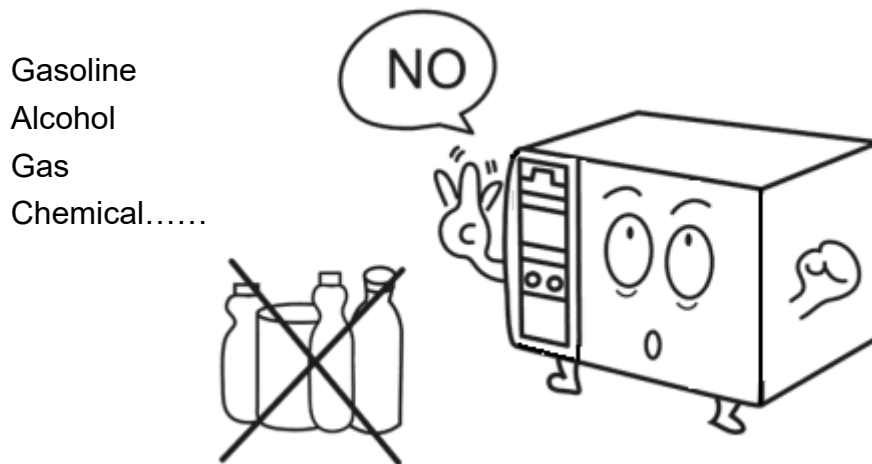



Figure 2

 **Warning:** A separate (dedicated) circuit is recommended for the sterilizer. The sterilizer should not be connected to an electrical circuit with other appliances or equipment.

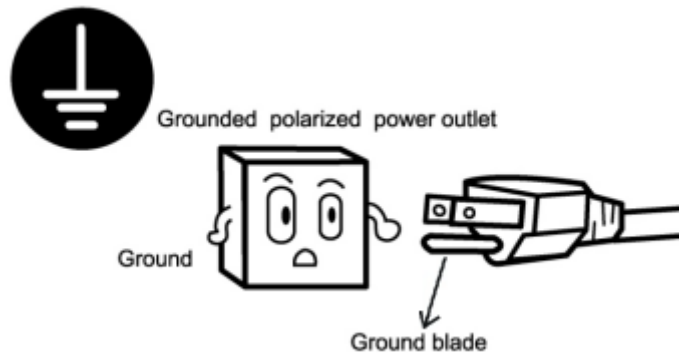



Figure 3

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

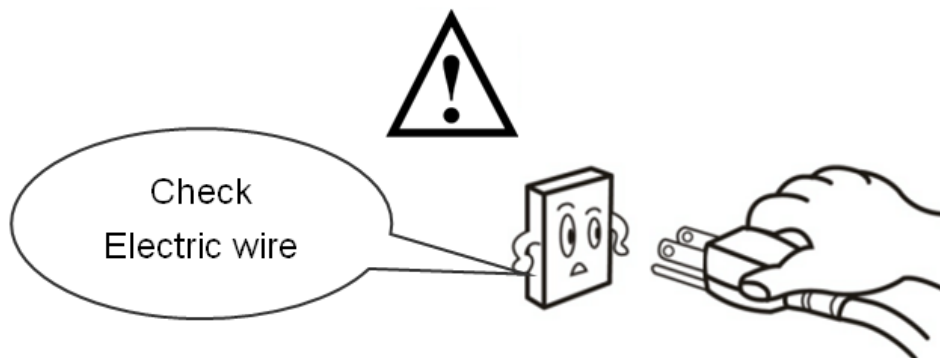


Figure 4

⚠Warning: Children are not allowed to use or play with the unit.

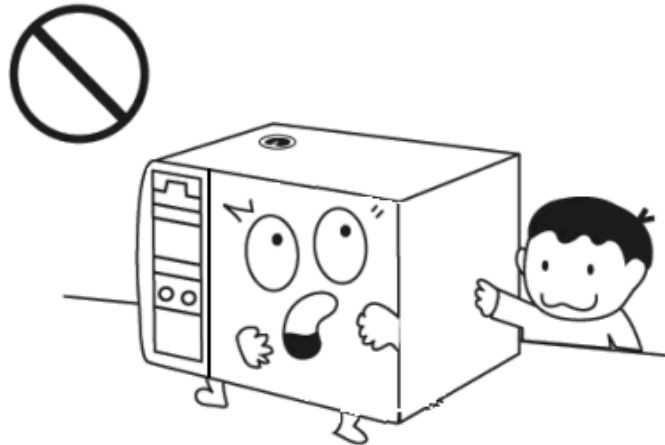


Figure 5

⚠Warning: Do not put your fingers into the gap on the hinged side of the door.

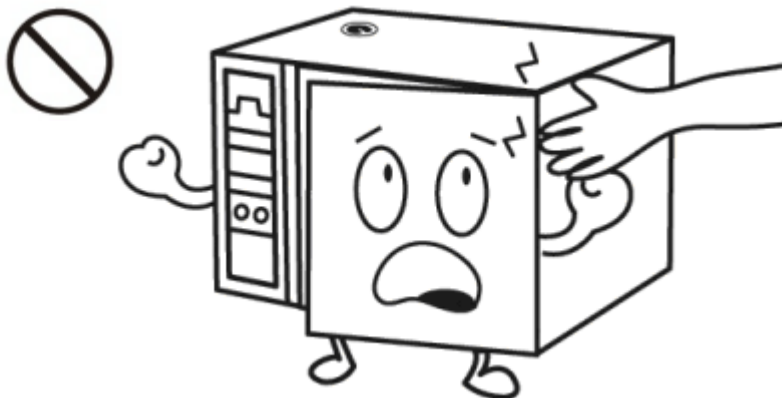


Figure 6

⚠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).

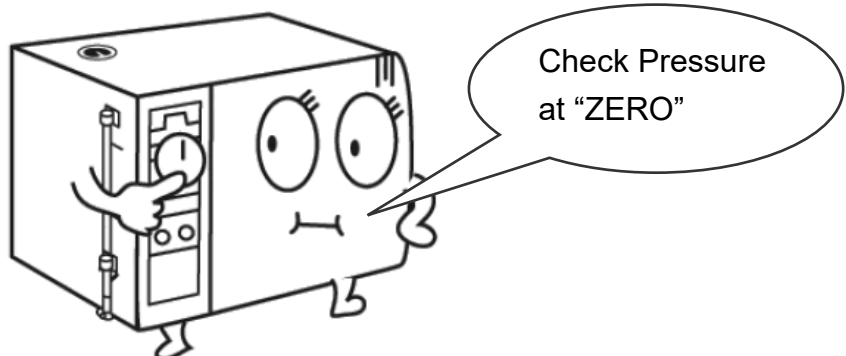


Figure 7

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

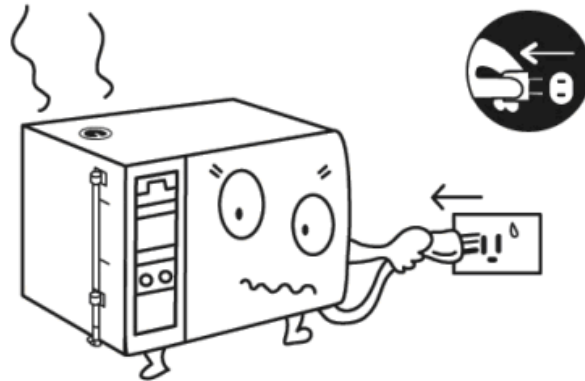


Figure 8

Warning: Use sterilization indicator test strips to check that sterilization has been successful.

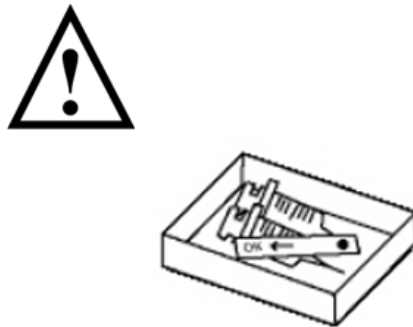



Figure 9

Warning: If the ALARM indicator light  illuminates, the machine is over-pressure or overheated. The sterilizer will shut down automatically. Contact your supplier for service support.

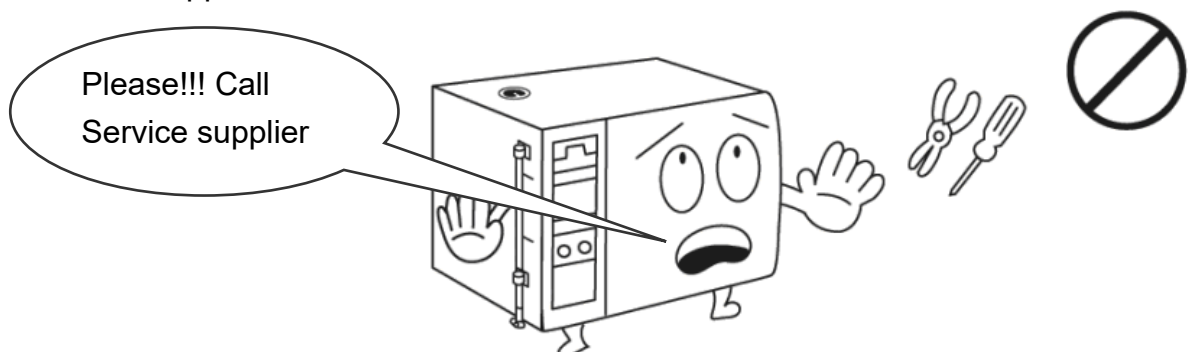


Figure 10

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.

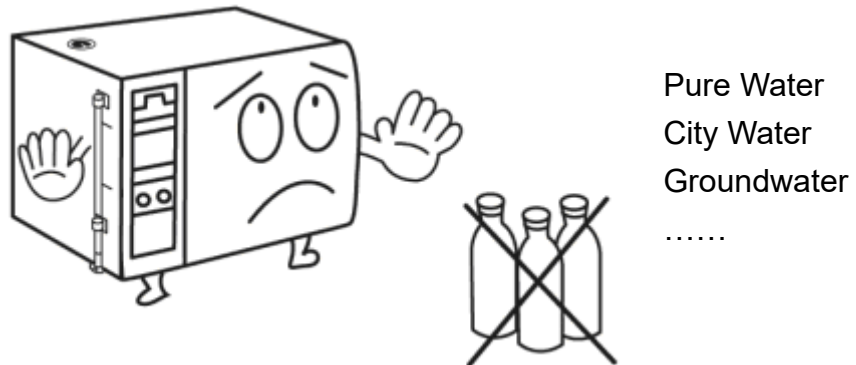


Figure 11

Caution: Do not put objects on the power plug or power cord.

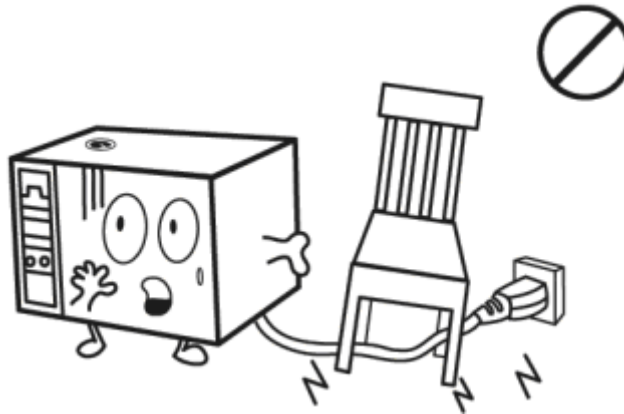


Figure 12

Caution: The outer casing and metal surfaces of the sterilizer will be hot during operation, please do not touch it.

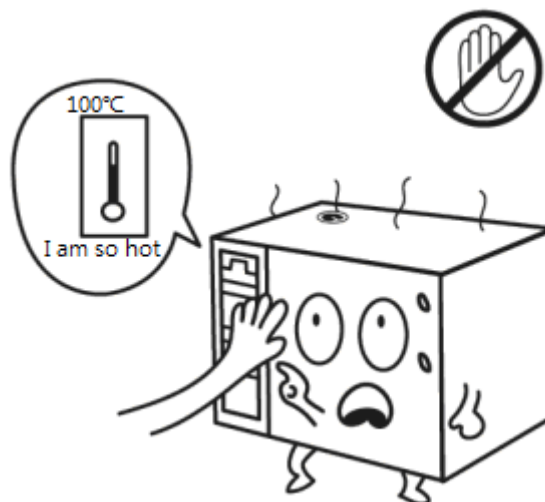


Figure 13

⚠ Caution: Do not place objects on top of the water intake cap.

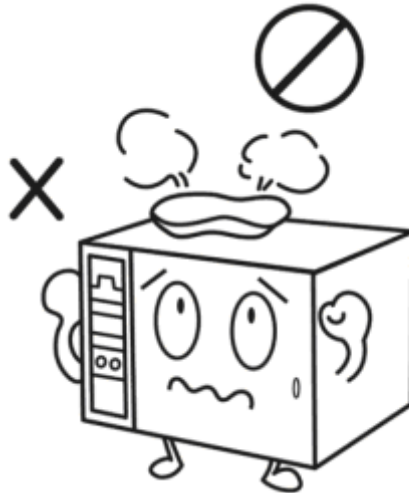


Figure 14

⚠ Caution: Always check the water level in the reservoir before running a sterilization cycle. If the LOW WATER indicator light illuminates, add distilled water. If the water is sufficient, but the LOW WATER indicator light is still illuminating, refer to Troubleshooting.

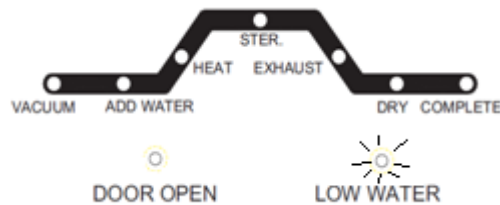


Figure 15

⚠ Caution: Do not overfill the water reservoir. The water level must be maintained between the green Full and Minimum labels on the right hand side of the sterilizer.

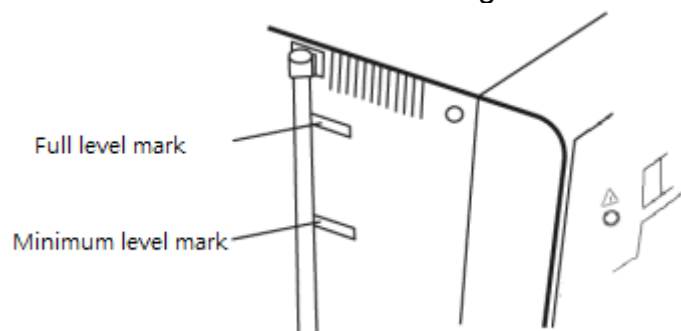


Figure 16

⚠ Caution: The ADD WATER indicator light will illuminate during the sterilization cycle. This is part of normal operation and no action on the part of the user is required.

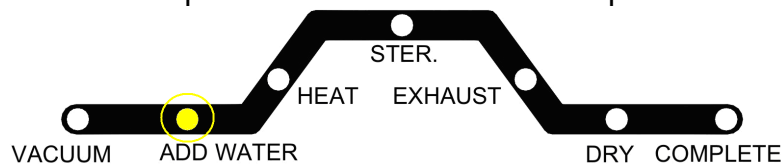


Figure 17

⚠ Caution: Steam and hot water will be present when opening the door after a sterilizer cycle. Avoid contact.

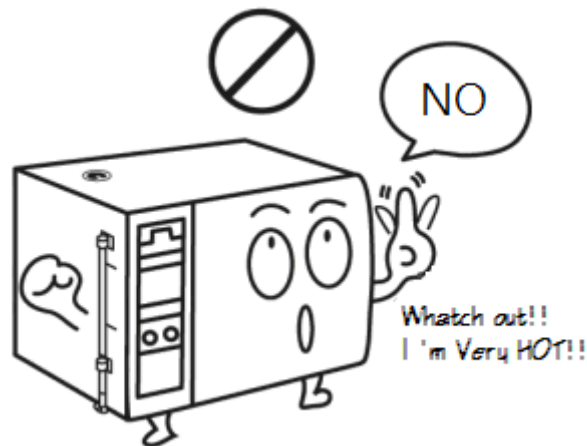


Figure 18

⚠ Caution: DO NOT place any objects on the top of the sterilizer.

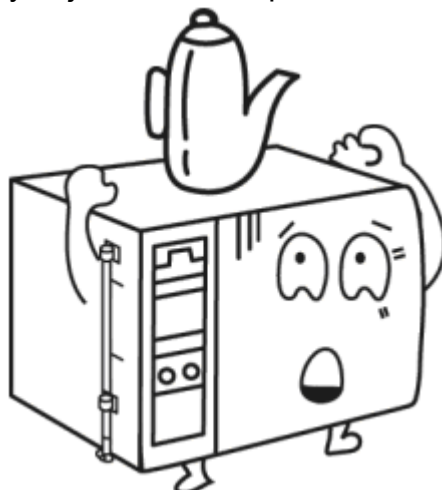


Figure 19

⚠Caution: Do not tip over the unit or allow it to fall on the power plug.

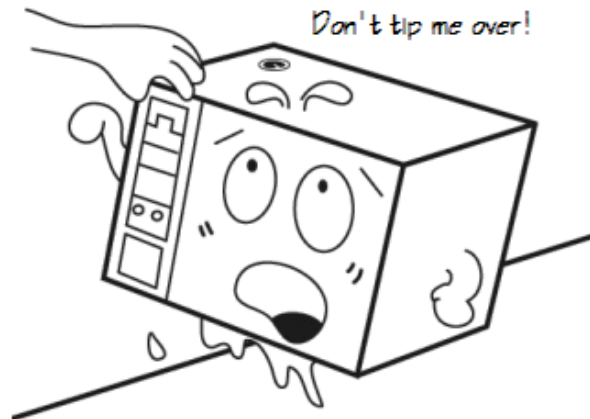


Figure 20

⚠Caution: It will require at least two (2) or more people to carry the sterilizer to avoid dropping it off by mistake.

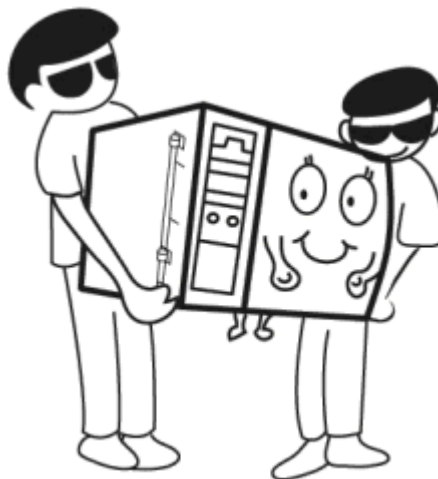


Figure 21

⚠Caution: Always allow a minimum of 20 min. between each sterilization cycle.

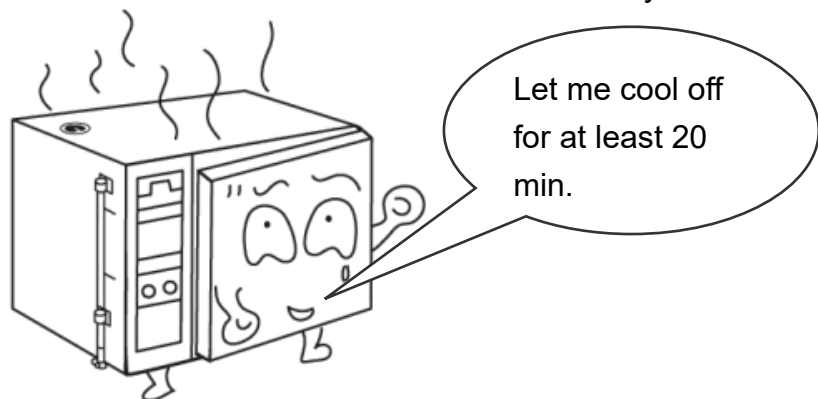


Figure 22

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

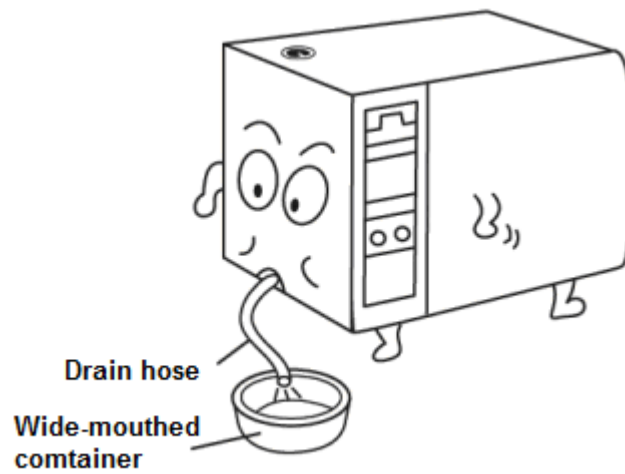


Figure 23

⚠ Caution: Always keep the sterilizer clean.

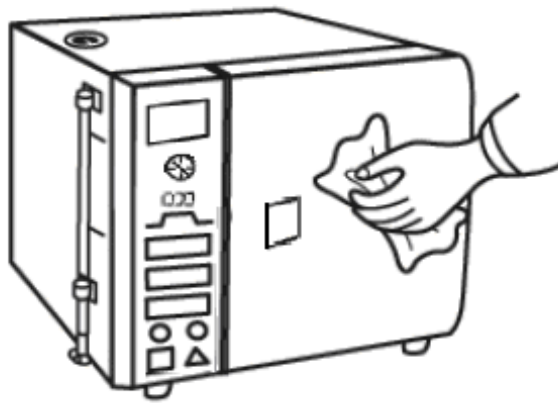





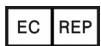








Figure 24

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)
	Authorised representative in the European community
	Manufacturer
	Date of manufacture It is a 6-digit number. The first 4 digits represent the year and the last 2 digits represent the month.
	Consult instruction manual for use
	On, connection to the mains
	Off, disconnection from the mains
	Open the door to this label.
POWER	Power switch
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: It will require at least two (2) or more people to carry the sterilizer to avoid dropping it off by mistake.

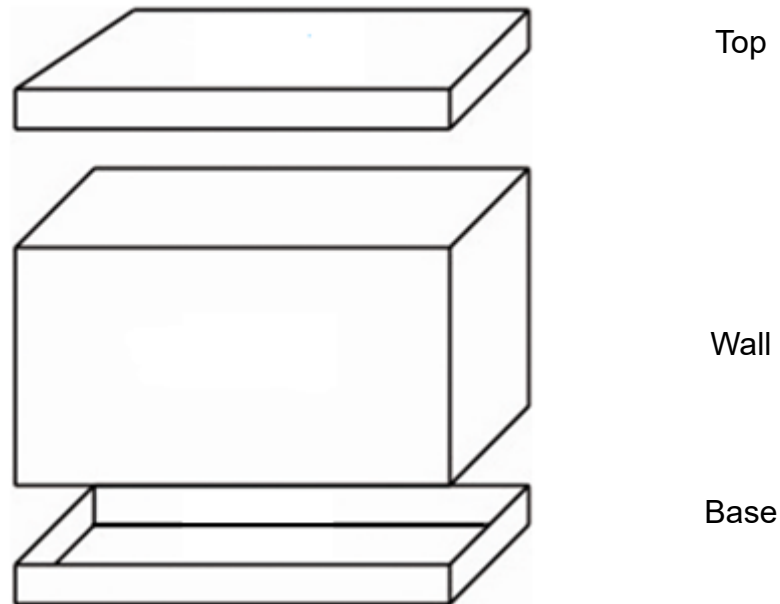


Figure 25

- A Cut the banding
- B Lift off the top cover of the carton
- C Remove the wall and the foam packaging inserts
- D Carefully lift the sterilizer from the packaging base
- E Check all accessories are present as follows (accessories are packed inside the sterilizer chamber):
 - Instruction Manual × 1
 - Heater Cover × 1
 - Sterilization Box × 1 (Standard)*
 - Tray Set × 1 (Optional) *
 - Tray × 3 (Optional)*
 - Spring Holder/Pouch Rack (Optional)*

*The accessories will be different according to the order request.

Note: We recommend that all packaging material is retained for possible re-use.

Note: For Reduce, Reuse, Recycle information, the packing material is made by corrugating medium-catalogue AA.

4. Installation

4.1 Environment

This equipment has been designed for use in accordance with the International EMC (Electromagnetic Compatibility) Standards. In view of different environments, please follow the instructions given below to eliminate interference, if necessary.

- Move the equipment or rotate its direction;
- Enlarge the space between the equipment and other machines;
- Put the plug into other outlets;
- Please consult with the local distributor or qualified electrician.
- Regarding the environmental temperature for installation, please refer to “11 Specifications”.

4.2 Install the sterilizer



Caution: Please read and follow “5.2” in order to understand the operation of the sterilizer.



Caution: While installation, please make sure that the bearing capacity of installation table is enough to carry the sterilizer. For the weight information of the sterilizer, please refer to “Specifications”.



Caution: Position the sterilizer on a stable bench or work surface, ensuring at least 10 cm clearance between the wall or other pieces of equipment and the sides of the unit for free circulation of air.



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.

A. Open the water reservoir cap; pour distilled water into the water reservoir as Figure 26.

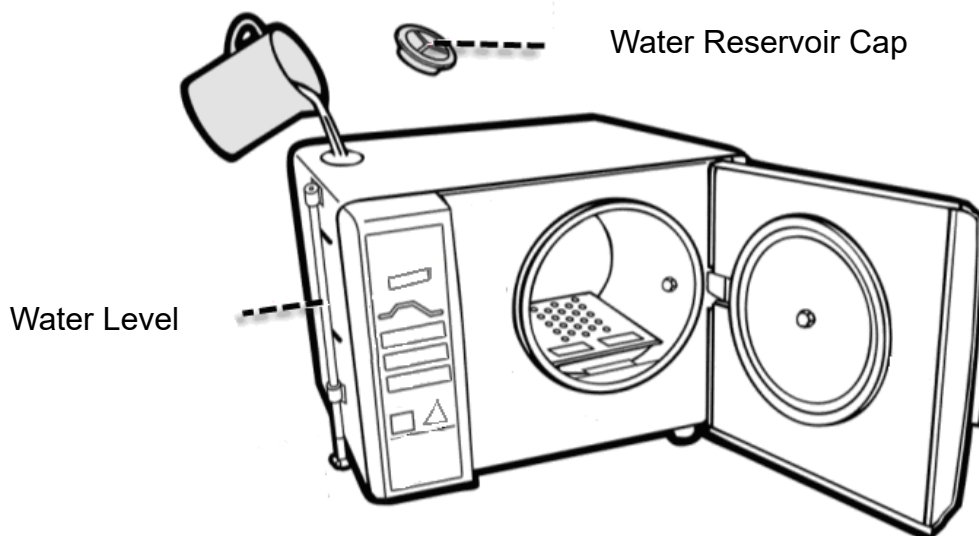


Figure 26

Caution: Please fill Distilled Water Only into the unit. Please do not fill water over the yellow water level mark as Figure 27 and Figure 32.

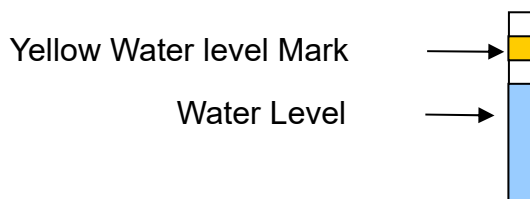


Figure 27

Warning: Do NOT fill water into the reservoir during the sterilization process to avoid overflow. After each sterilization cycle is completed, any remaining water in the chamber will be returned to the reservoir automatically. (*The water will remain in the chamber if Liquid program performed.)

- B. Install the heater cover to the chamber as Figure 28 (standard accessory) Ensure the rounded edge is towards the back and the vertical front edge of the cover locates securely into the corresponding slots in the lower part of the chamber opening.

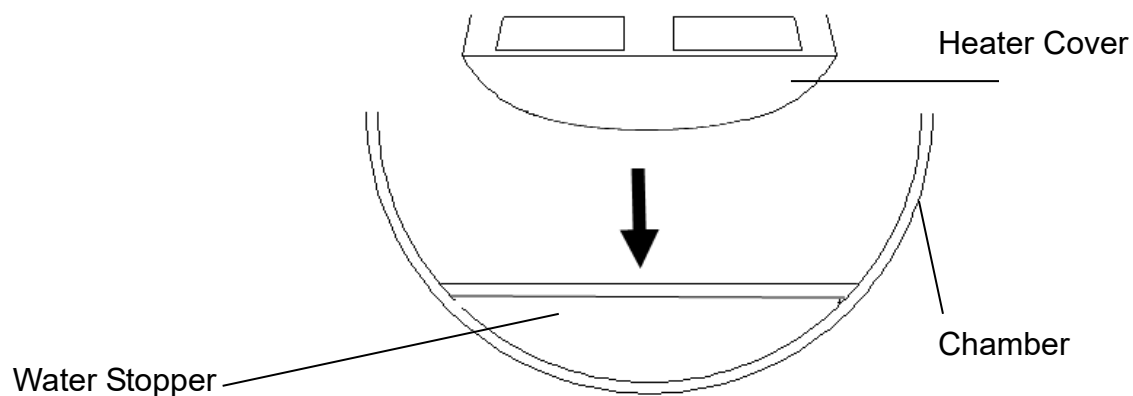


Figure 28

- C. Install the Sterilization Box as Figure 29. (standard accessory).

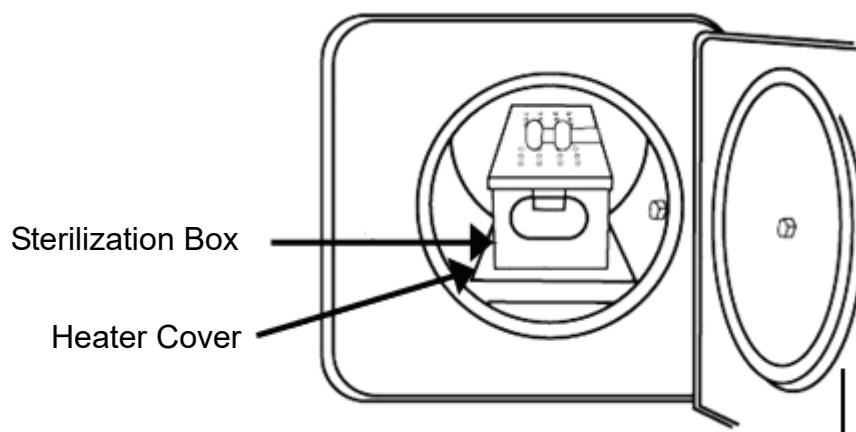


Figure 29

D. Install the tray frame as Figure 30 (optional accessory).

⚠ Caution: The frame should be installed as Figure 30 below. The indentation of the frame will pass the bushing in the chamber.

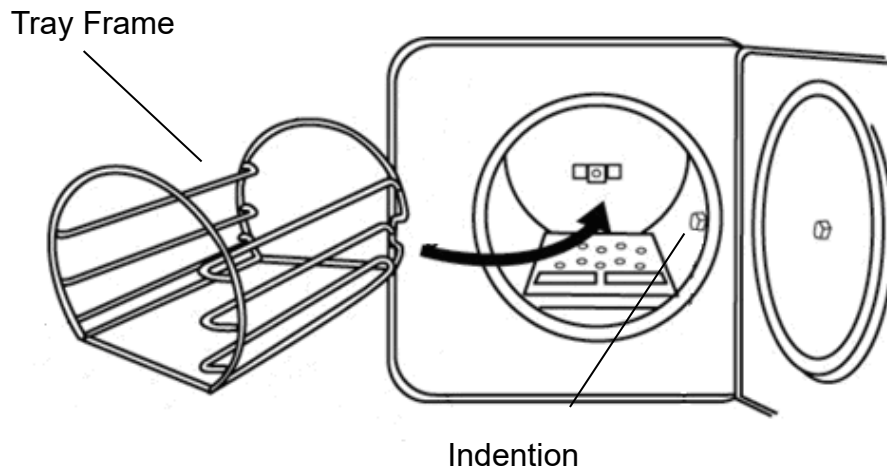


Figure 30

E. Install the tray as Figure 31. (optional accessory)

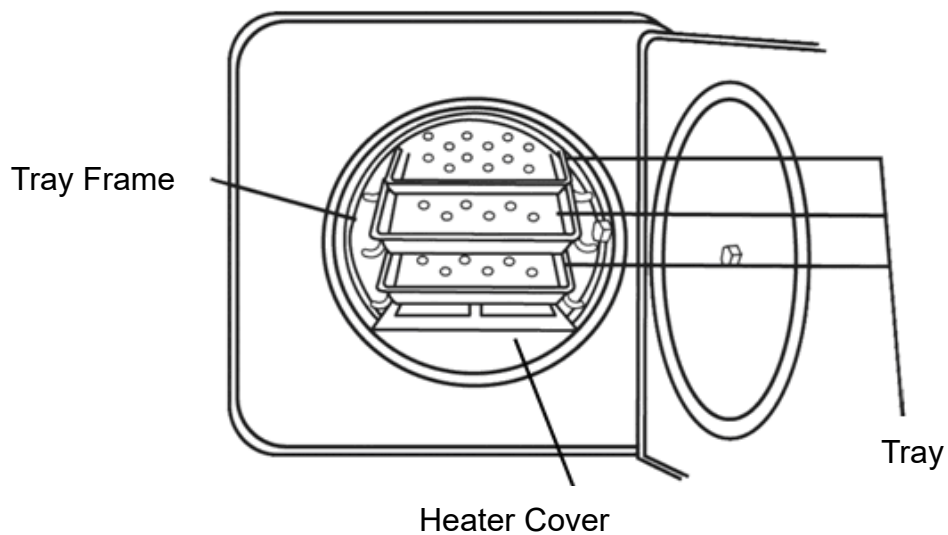


Figure 31

F. Close the door and turn the knob clockwise 90° to lock.

- G. Ensure the Power Switch is in OFF “O” position, and then plug the power cord into a separate (dedicated) mains socket.



Warning: A separate (dedicated) socket is required for the sterilizer. Make sure the socket is earthed and can offer the capacity of 16 A / 230V AC.



Warning: The plug is one of the measures of emergency cutoff; please make sure that the plug is accessible after installation.

- H. Press the “POWER” switch to ON “I” position, the power indicator light should illuminate. The “DOOR” indicator light should be off. If the sterilizer does not perform as above-mentioned, please turn off the power and unplug the sterilizer, repeat the steps from 4.2.A to 4.2.F. If the problem still presents, please turn off the power and unplug the sterilizer. Contact the local distributor for help.

5. Introduction

5.1 Intended Use

This product is a tabletop 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*.

(*Liquid, Flash program and recorder are optional by order.)

5.2 Description of the Sterilizer

5.2.1 External View



Figure 32

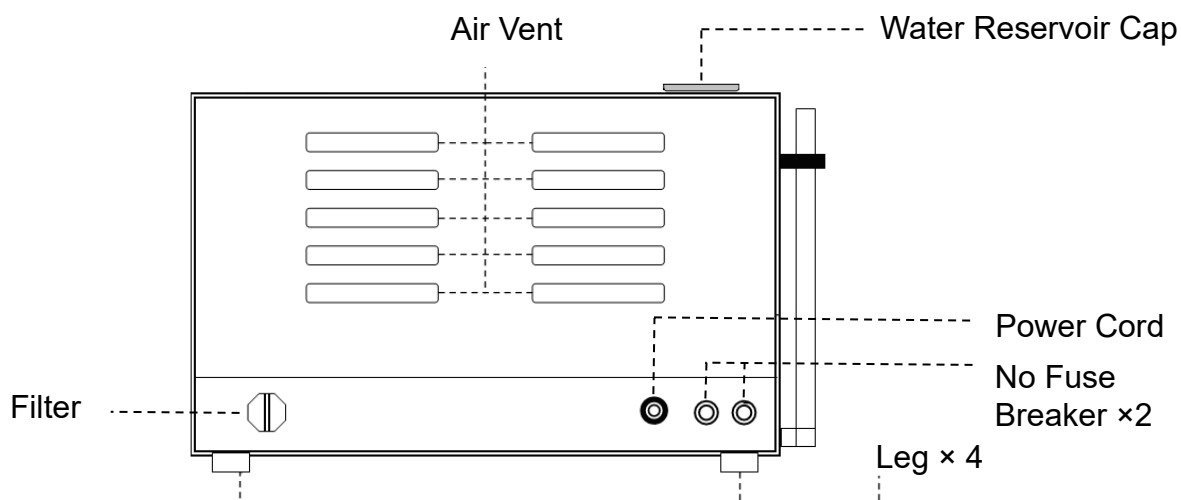


Figure 33

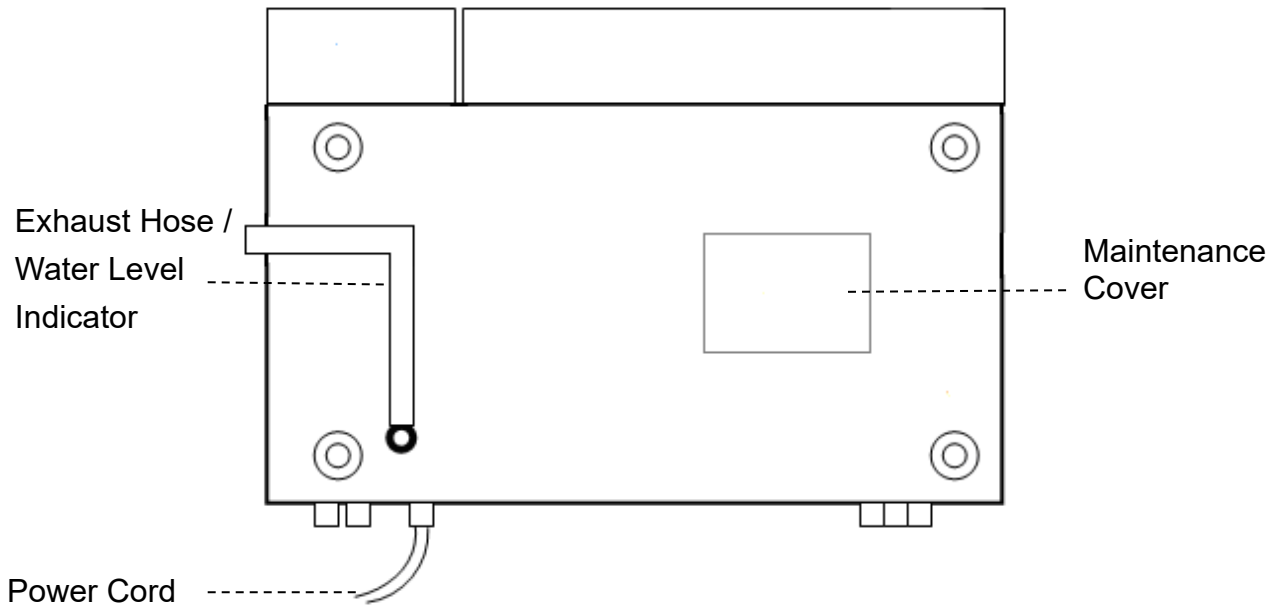


Figure 34

5.2.2 Internal Configuration

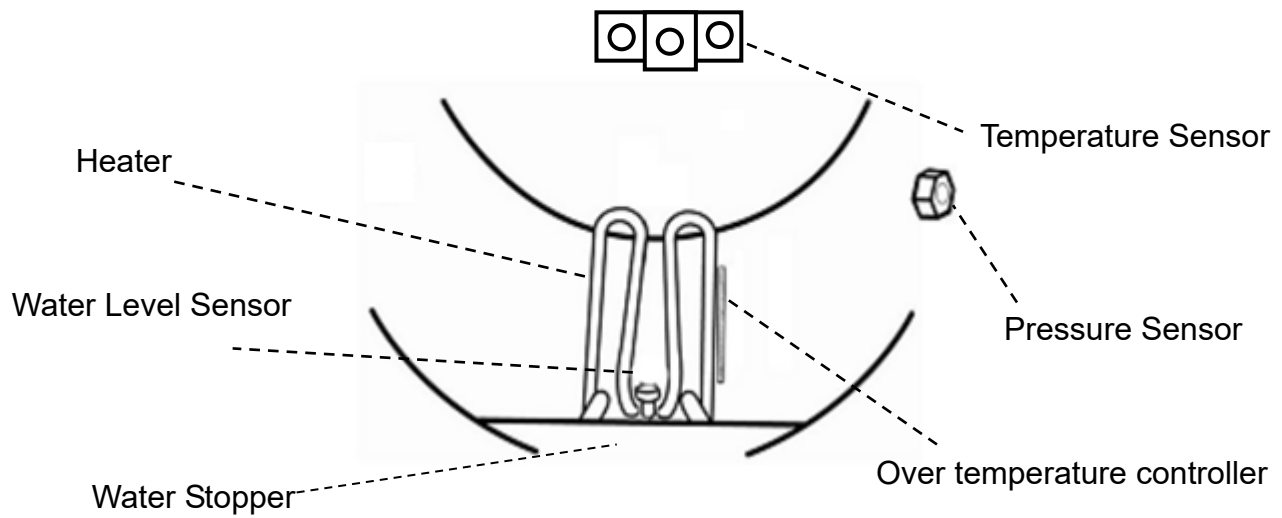


Figure 35

5.2.3 Control Panel (Re-Dry Program)

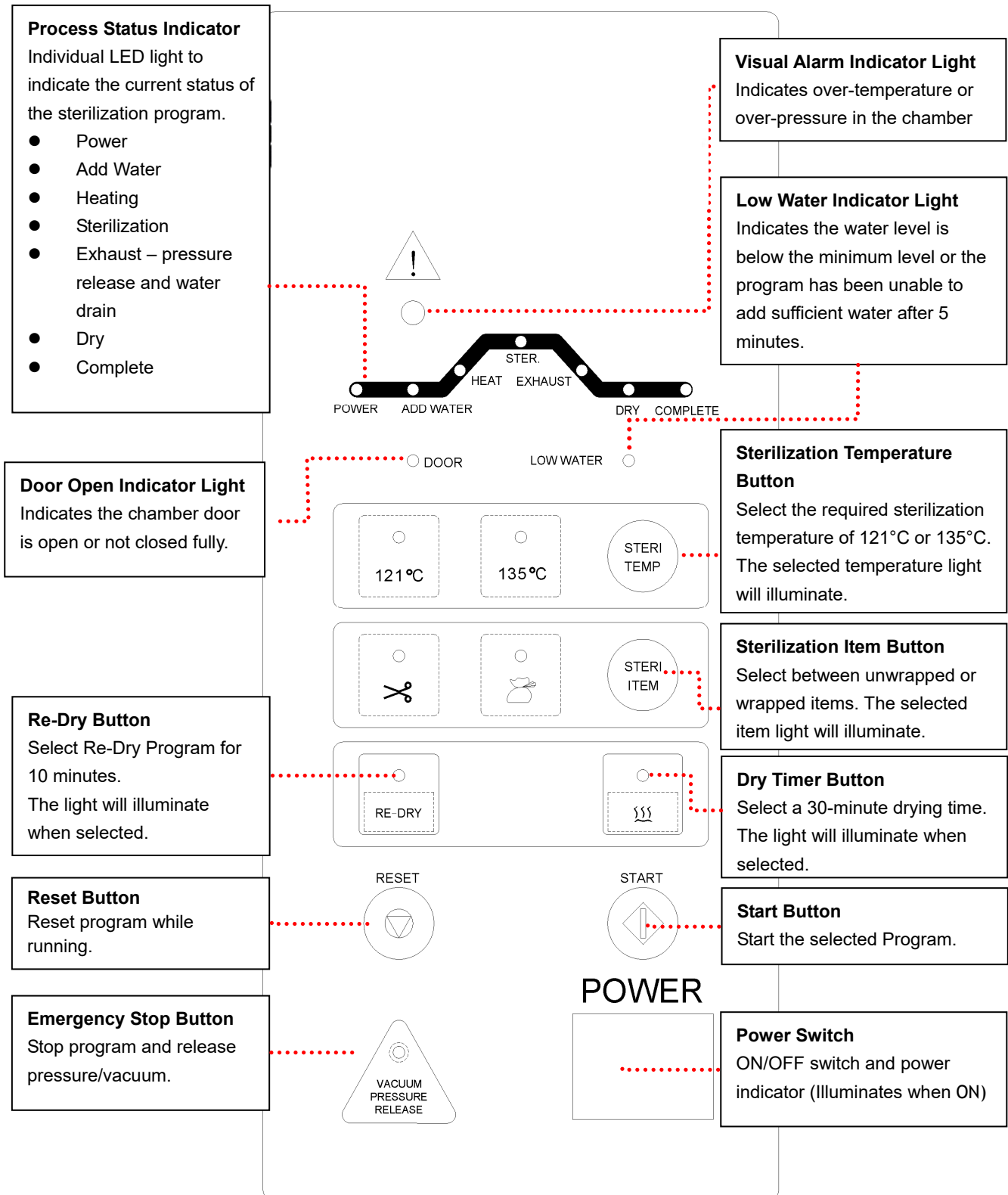


Figure 36

5.2.4 Control Panel (Liquid Program) *Optional by order request.

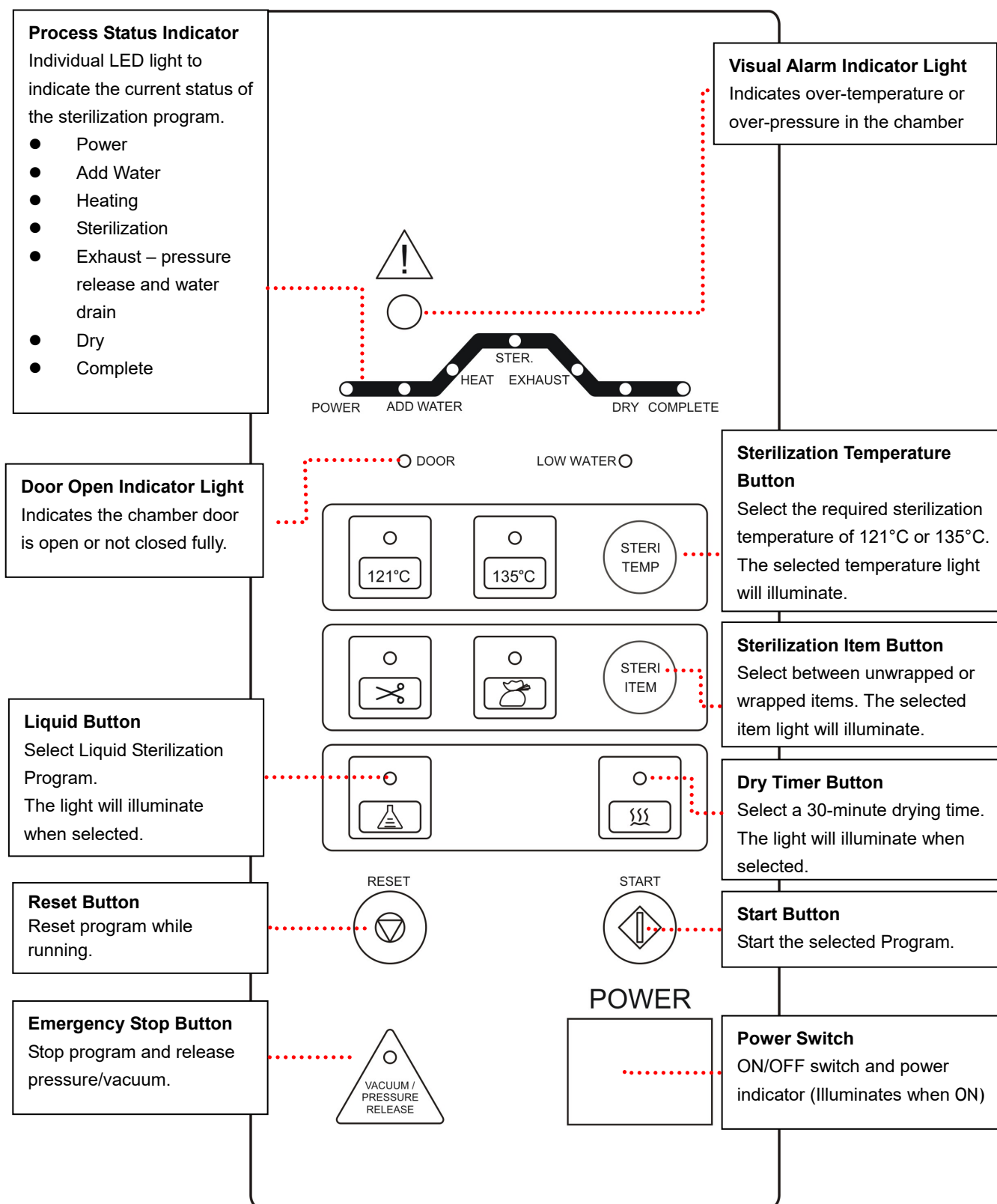
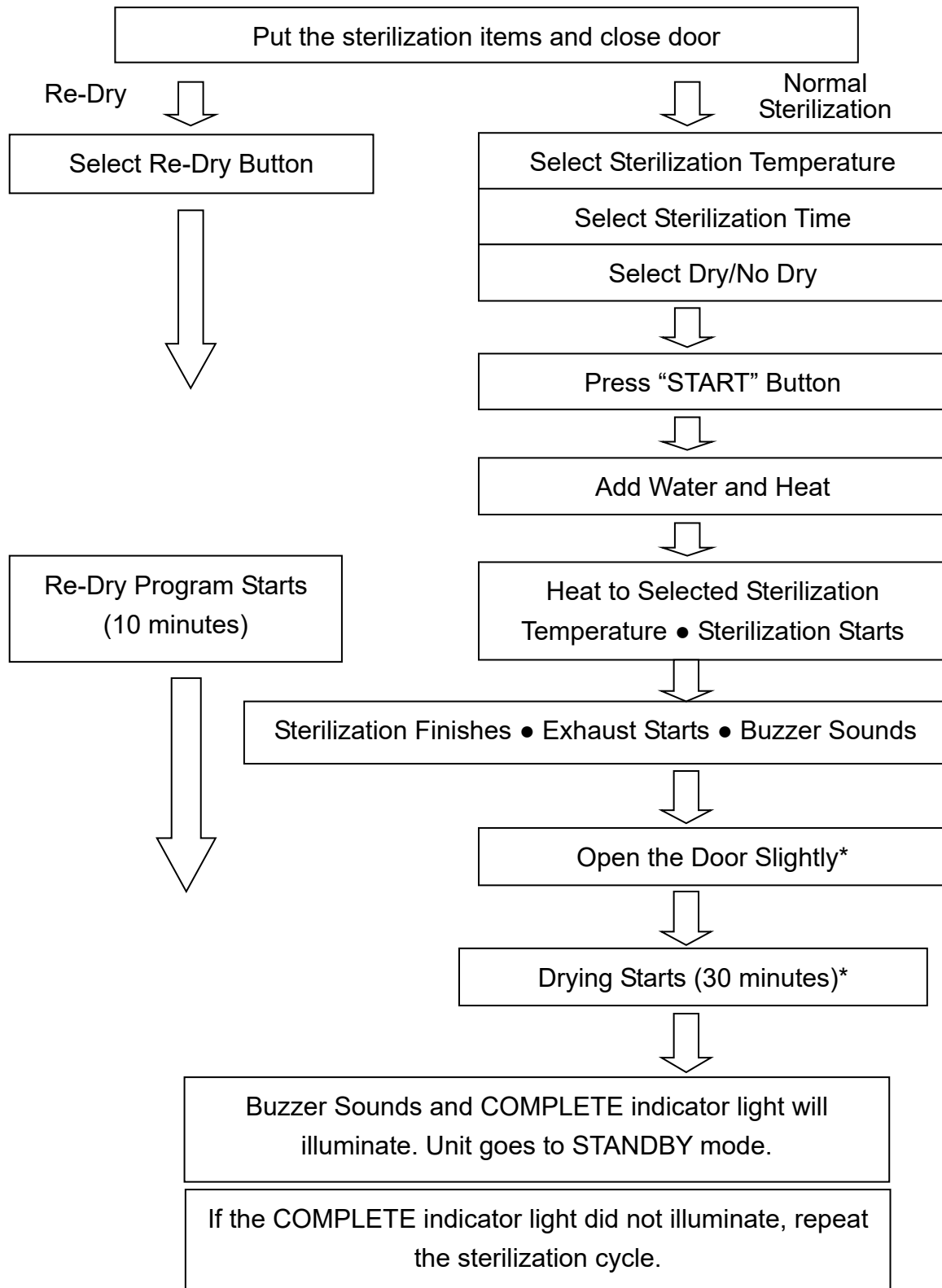


Figure 37

6. Operation

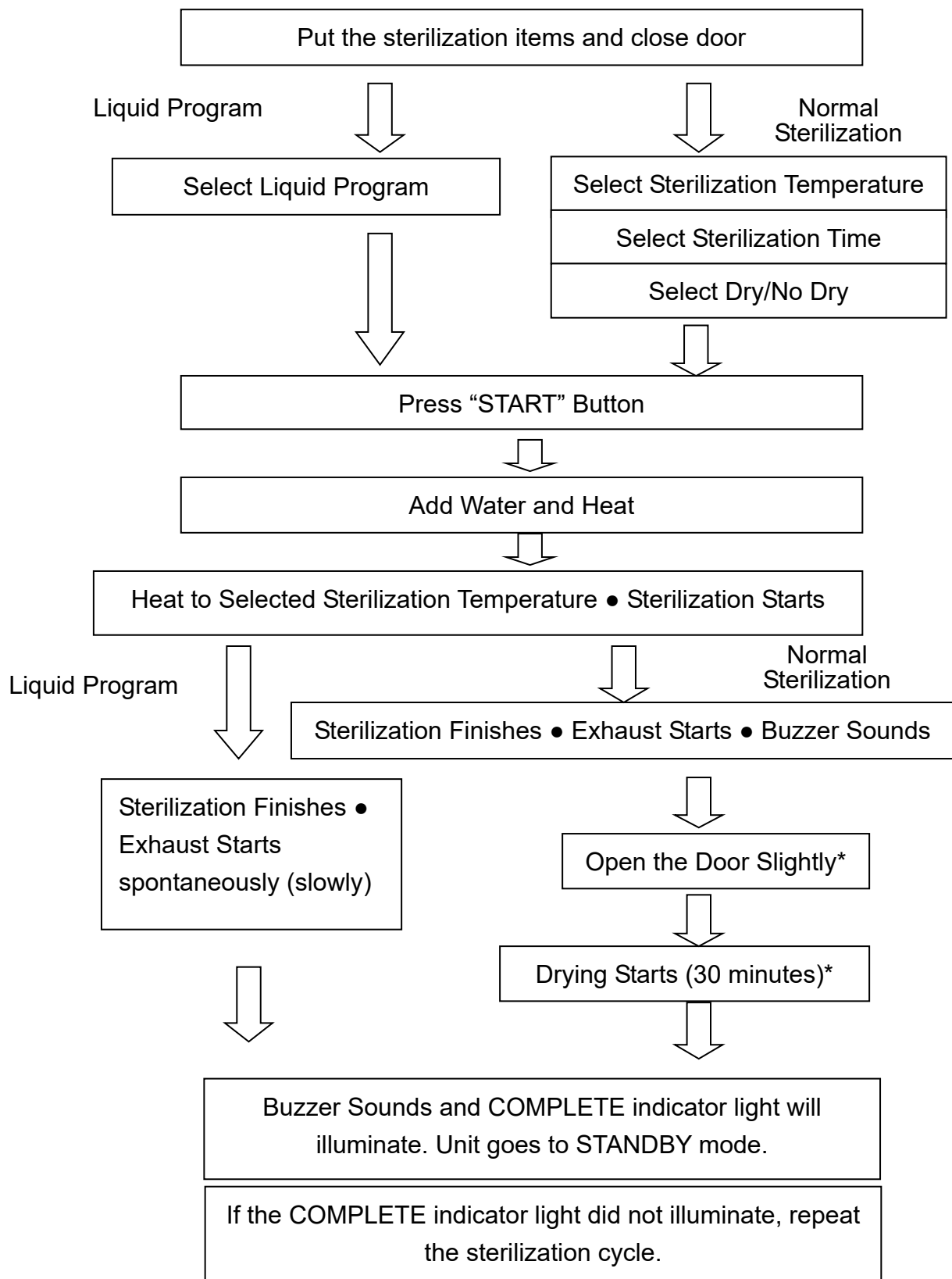
6.1 Operation Overview

6.1.1 Re-Dry Program



*If dry timer is selected.

6.1.2 Liquid Program *Optional



*If dry timer is selected.

6.2 Prepare Sterilization

- A. Follow “4. Installation” to finish installation first.
- B. Follow “4.2 Install the sterilizer” to make sure the water inside reservoir is sufficient.
- C. Check the Pressure Gauge is reading ZERO, and then open the door by turning the door knob 90° counterclockwise.
- D. Place the items to be sterilized and the sterilization indicator strips (or biological indicator) into the box as required. Remember to open both side windows before placing the box into the chamber.

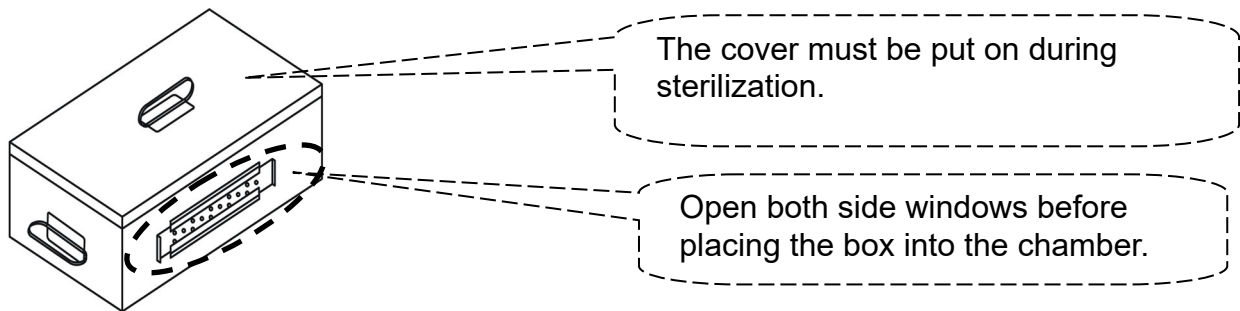


Figure 38

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

Warning: Refer to “11. Specifications” for the maximum permissible load. Failure to follow these instructions may cause the sterilizer to malfunction and result in an unsuccessful sterilization cycle.

- E. Close the door.
- F. Press the “POWER” switch to ON “I” position, the power indicator light should illuminate. The “DOOR OPEN” indicator light should be off.
- G. How to set the normal program:

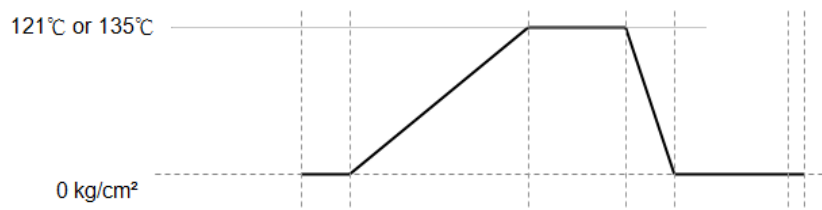




Figure 39

- G.1 Press “STERI TEMP”  to select 121°C or 135°C

G.2 Press “STERI ITEM”  to select unwrapped instruments or wrapped items. The corresponding parameters will be:

	Sterilization Temperature 121°C	Sterilization Temperature 135°C
Unwrapped	22 Mins	4 Mins
Wrapped	30 Mins	15 Mins

G.3 Press Dry Timer Button  to select a 30-minute drying time. (*If drying is required.)




G.4 Press the START Button  and the sterilizer will automatically run through the selected program. The current progress of the sterilization cycle is indicated by the illuminated LED on the Process Status Indicator. (Figure 40)



Figure 40

G.5 Operations Sequence

- ADD WATER: Add water from water tank into chamber automatically until water reach to preset level.
- HAET: Heating chamber by heater.
- STER.: Sterilization temperature is maintained for the preset sterilization time.
- EXHAUST: Steam is exhausted out of the chamber until pressure drops to zero after STER. step.
- Buzzer sounds to remind operator to open the door slightly to this mark . Leftover moisture is then removed by dry function for 30 minutes.
- On completion, buzzer will sound (long beep). The program has finished when buzzer stops alarm and the COMPLETE indicator light is illuminated.

 **Warning:** If the COMPLETE indicator light was not lit, the cycle has failed and should be re-run.

G.6 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 “9. Troubleshooting”.



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: If using the sterilizer continuously, it's required to have a 20-minute interval between each sterilization cycle to allow the unit to cool.

6.3 Re-Dry Program

Press Re-Dry  button and the indicator light will illuminate. Then press START button



to run a 10-minute re-dry program. During the re-dry process, the DRY indicator light will flash on the Process Status Indicator.

On completion, the buzzer will sound (long beep). The program has finished when the buzzer STOPS and the COMPLETE indicator light is illuminated on the Process Status Indicator.

6.4 Liquid Program (Optional)

- A. Follow “4. Installation” on Page 12 to finish installation first.
- B. Follow “4.2 Install the sterilizer” on Page 12 to make sure the water inside reservoir is sufficient.
- C. Check the Pressure Gauge is reading ZERO, and then open the door.
- D. Place the items to be sterilized into the container as required.



Warning: Refer to “10. Specifications” for the maximum permissible load. Failure to follow these instructions may cause the sterilizer to malfunction and result in an unsuccessful sterilization cycle.

- E. Close the door.
- F. Press the “POWER” switch to ON “I” position, the power indicator light should illuminate with a short beep. The “DOOR” indicator light should be off.

G. How to set the Liquid program

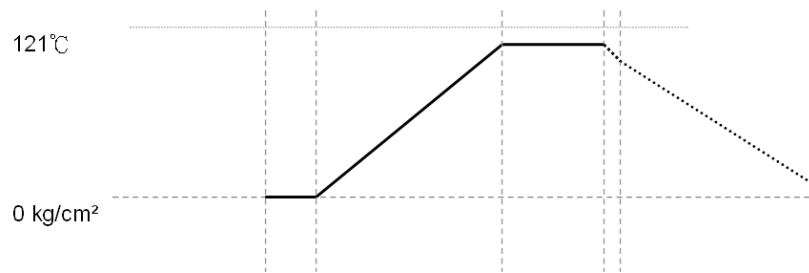



Figure 41



Caution: After the sterilization phase finished, the unit will take 20 minutes to exhaust spontaneously. Then the COMPLETE indicator light is illuminated on the Process Status Indicator.

G.1 Press  to start "Liquid Program". The corresponding sterilization time will be:

Sterilization Time	40 Minutes
Sterilization Temperature	121°C
Dry Time	N/A



G.2 Press the START Button and the sterilizer will automatically run through the selected program. The current progress of the sterilization cycle is indicated by the illuminated LED on the Process Status Indicator. (Figure 42)


Note: The DRY phase won't be performed.




Figure 42


G.3 Operations Sequence


- ADD WATER: Add water from water tank into chamber automatically until water reach to preset level.
- HAET: Heating chamber by heater.
- STER.: Sterilization temperature is maintained for the preset sterilization time.


- EXHAUST: Steam is exhausted slowly out of the chamber until pressure drops to zero after STER. step.
- Buzzer sounds to remind operator to open the door slightly to this mark “ “. Leftover moisture is then removed by dry function for 30 minutes.
- On completion, buzzer will sound (long beep). The program has finished when buzzer stops alarm and the COMPLETE indicator light is illuminated.


 **Warning:** If the COMPLETE indicator light was not lit, the cycle has failed and should be re-run.


G.4 Open the door and take out the sterilized items.

 **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:** If using the sterilizer continuously, it's required to have a 20-minute interval between each sterilization cycle to allow the unit to cool.

 **Caution:** After the Liquid program, please take out the sterilized items, and then re-run the “Normal” program to let the water inside chamber return to the water reservoir.

6.5 Emergency Stop

Press the Vacuum/Pressure Release Button  3 seconds during a cycle to stop the program and release the pressure/vacuum. The sterilizer will sound to alert. Please wait till the pressure gauge is reading ZERO, and then the Reset Button  can be pressed to reset the program.

 **Warning:** The Vacuum/Pressure Release Button can only be pressed when there's an unusual event or emergency. The sterility of the sterilized items should be verified


again.



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.

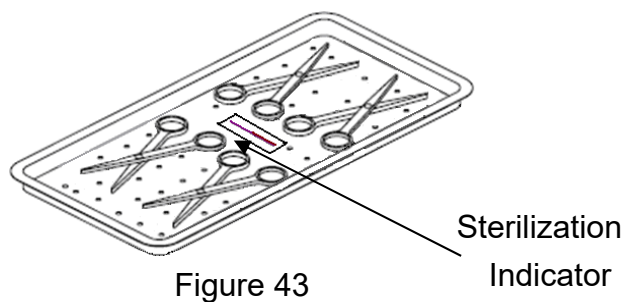
6.13 Placement for items to be sterilized


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

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

6.13.1 Sterilization for Implements

Place implements on the tray evenly according to Figure 43. Do not pile up nor overlap each implement.



 **Warning:** If implements are packed with sterilizing pouches, please make sure not to pile them up. Follow Figure 44 for correct placement and do not overlap pouches like to Figure 45 ensure the sterilization quality.

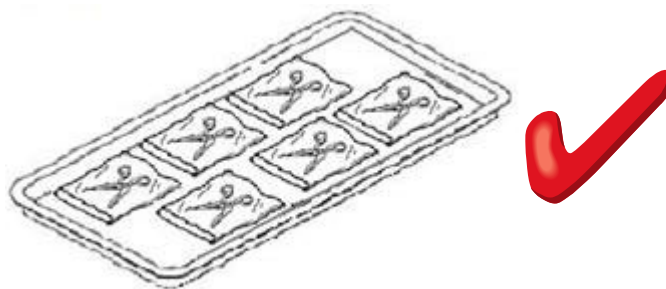


Figure 44

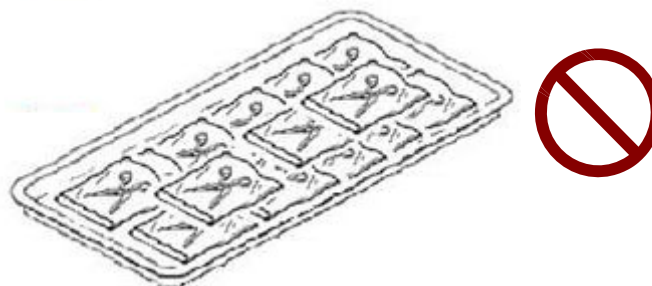


Figure 45

⚠ Warning: We suggest using Spring Holder for items with sterilizing pouches to assure sterilization result. Follow Figure 46 or Figure 47 to place each pouch separately. Spring holder is available as an optional accessory.

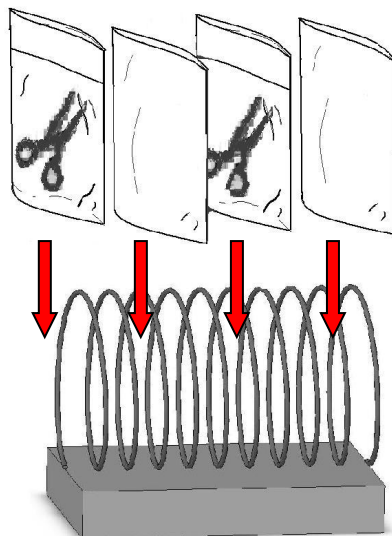


Figure 46

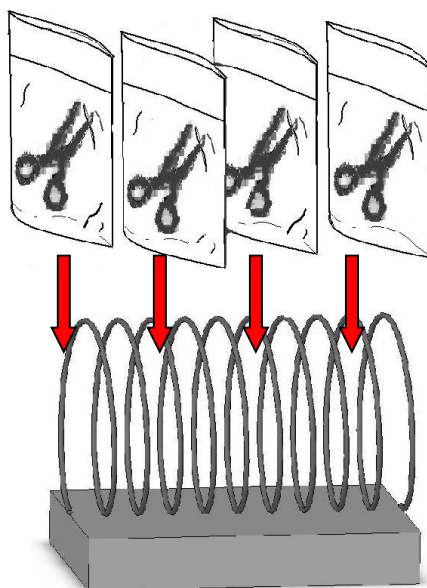


Figure 47

Warning: If implements are packed with sterilizing pouches and placed inside a sterilization box, make sure to display items as Figure 48.

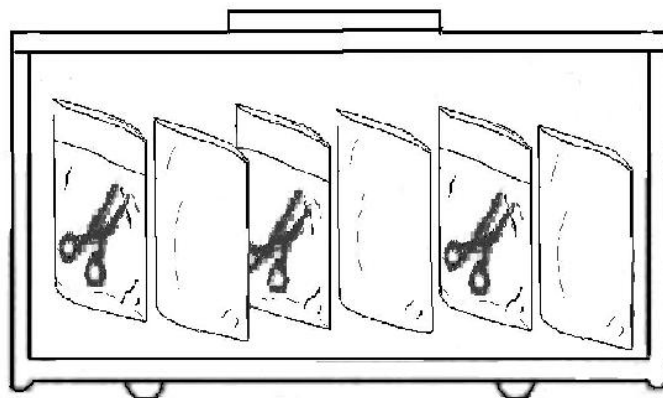


Figure 48

6.13.2 Sterilization for Wrap

Warning: To sterilize absorbent cotton or woolen, please wrap it with a thin towel, covering cloth, linen, or sterilizing pouch to avoid piping clog according to Figure 49.

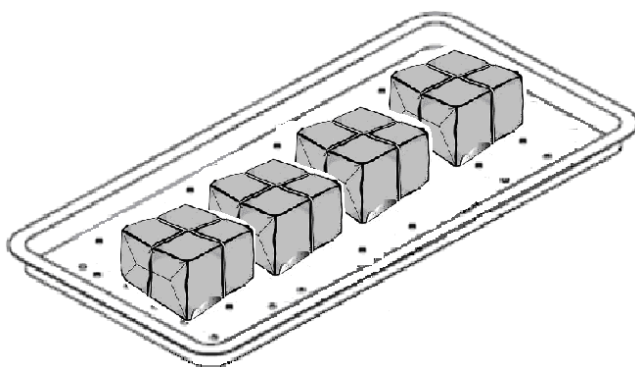


Figure 49

- Place wrap upright on the tray.
- Be careful not to let wrap touching the inner side of chamber.
- Make sure the openings of wraps are perpendicular to the tray in order to improve sterilization performance.
- Arrange openings of wraps toward same direction.
- When place sterilizing pouch on the sterilization box or tray, make sure the medical grade paper is facing upward.

6.13.3 Placement for sterilization box

- Insert chemical indicator into wrap, then place wrap inside the sterilization box.
- Be sure there will be enough space between each wrap for better air flow.

- Make sure to close the cover of sterilization box properly.

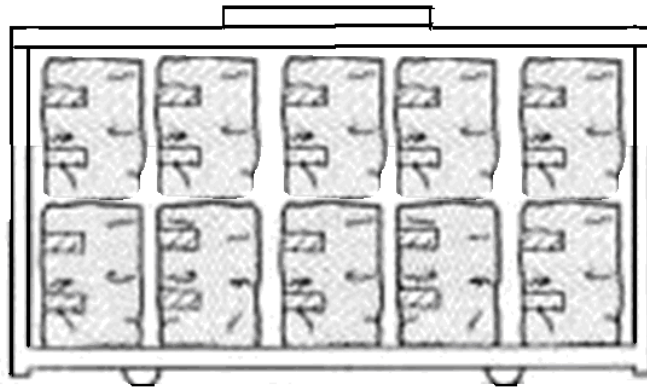


Figure 50



Warning: Please follow above Figure 50 and place wrap vertically inside the sterilization box.

6.13.4 Glassware

- Use only heat-proof glass.
- Verify that the beaker is only filled 2/3 full and the lid is on loosely to allow for expansion.
- Items should not be allowed to touch the walls of the Chamber as the hot metal can damage the item.

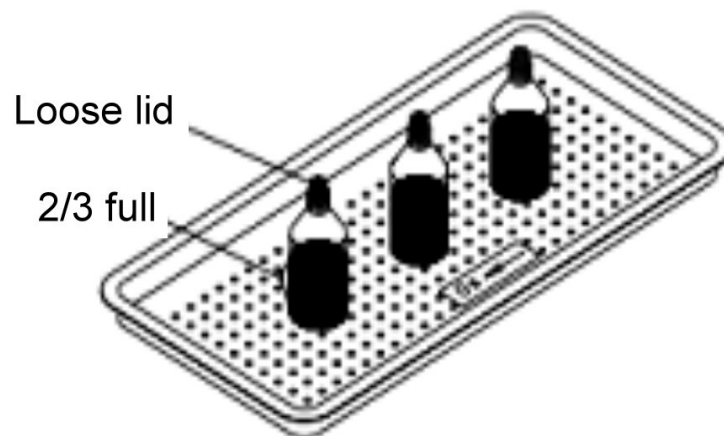


Figure 51

7. Recorder (optional)

7.1 Intended use

This paperless Recorder records the sterilization temperature, theoretical steam pressure and real time information during each cycle as an optional method of printer. It records the specified information onto a SD memory card (hereinafter referred to as SD card) or an USB flash drive, in the Excel csv (Comma Separated Values) format which compatible with Microsoft® Office Excel or Windows® WordPad.



Note: Insert a formatted SD card or a formatted USB flash drive before commencing a sterilization cycle.



Note: Microsoft Office Excel and Microsoft WordPad are registered trademarks of Microsoft, Inc. Microsoft is a registered trademark.



Note: A minimum 20 minutes is recommended between each sterilization cycles, and be sure of “Data transfer complete” has been completed to a USB or a SD memory before starting a new sterilization cycle.

7.2 Recording contents

Description of recording contents:

Two type of recording files will be created for each sterilization cycle. One is Detail Contents in the format of “YYMMDD_HHMMSS.csv”, and the other is the Summary Contents in the format of “SYYMMDD_HHMMSS.csv”.

7.2.1 Description of Detail Content

Data	Descriptions
Version: V1.00	Software Version
Date: 2012/4/10	Date of starting the data, in the format of YYYY/MM/DD
Time: 09:48:56	Time of starting the data, in the format of HH:MM
Cycle No. 00009	Cycle counter
<pre> ----- State Time Temperatu Theoretical steam pressure hh:mm oC bar ----- start 09:48:56 28.5 09:48:57 28.5 . 10:28:20 135.7 steri_start 10:28:21 135.9 2.19 10:28:22 136 2.2 . 10:43:30 136.3 2.23 steri_end 10:43:31 136.3 2.23 10:43:32 136.5 . 10:46:26 101.6 end 10:46:27 101.6 END OF CYCLE ----- </pre>	Recording the time and temperature each second after press the “Start” button. The State column will shows the holding time of start point and end point; and “END OF CYCLE” will be presented after complete/stop the cycle. Additionally “Theoretical steam pressure” value will be shown per record during the holding time for references.
Total: 0045 min	Total duration of sterilization cycle
Max. steri temp: 136.3	Max temperature during the holding time
Min. steri temp: 135.9	Min temperature during the holding time
Steri. Time: 04 min 04 sec	Duration of the holding time for sterilizing

7.2.2 Description of Summary Contents


Data	Descriptions
Version: V1.00	Software Version
Date: 2012/4/10	Date of starting the data, in the format of YYYY/MM/DD
Time: 09:48:56	Time of starting the data, in the format of HH:MM
Cycle No. 00009	Cycle counter
<pre> ----- State Time Temperatu Theoretical steam pressur hh:mm oC bar ----- start 09:48:56 28.5 steri_start 10:28:21 135.9 2.19 steri_end 10:43:31 136.3 2.23 end 10:46:27 101.6 END OF CYCLE ----- </pre>	Concise data extracting from the Detail Content, which record the Start time, holding time of start point and end point, theoretical steam pressure of start point and end point and “END OF CYCLE” point.
Total: 0045 min	Total duration of sterilization cycle
Max. steri temp: 136.3	Max temperature during the holding time
Min. steri temp: 135.9	Min temperature during the holding time
Steri. Time: 04 min 04 sec	Duration of the holding time for sterilizing


7.3 Storage medium

Use only recommended storage medium by the manufacturer such as SD, SD/HC (up to 32GB), or USB (2.0) flash drive.




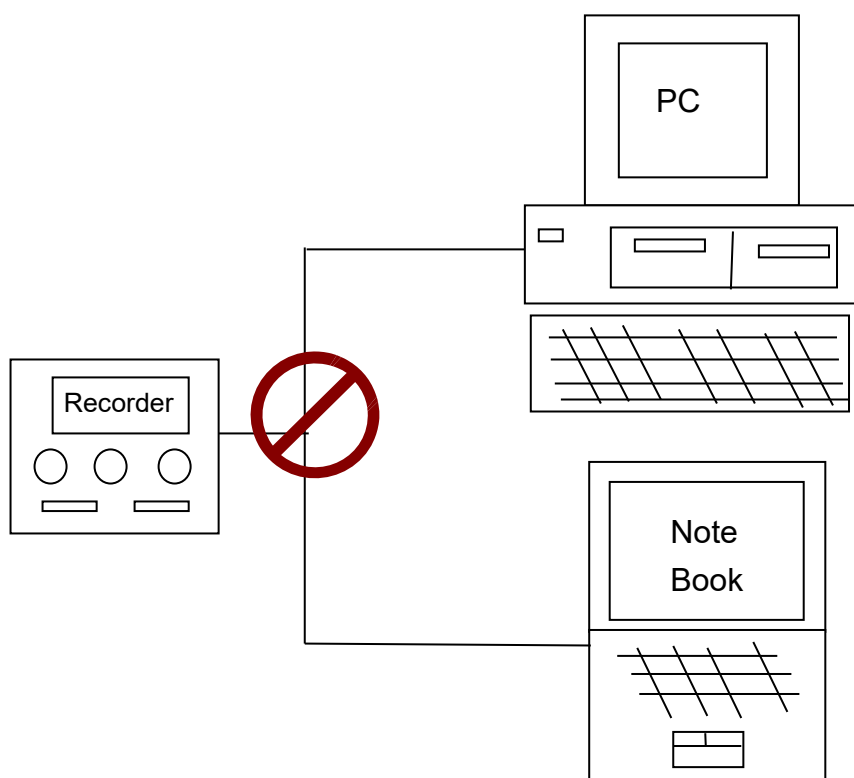
You should format your storage medium prior insert into the Recorder for the first time. SD card supports FAT file system, and SD/HC card support FAT32 file system. You can operate on the files in this card in PC via a card reader or SD card interface. Data will be stored under the root directory only.

 CAUTION: You should backup your storage medium to a safe medium periodically.

 CAUTION: External hard drive is not allowed for connecting to the recorder.



 CAUTION: Do not connect the Recorder to a PC or mobile devices such as notebooks.



7.4 Recorder panel



Figure 52

7.5 Function description of the recorder

Refer to Figure 53 for the flow chart of recorder.

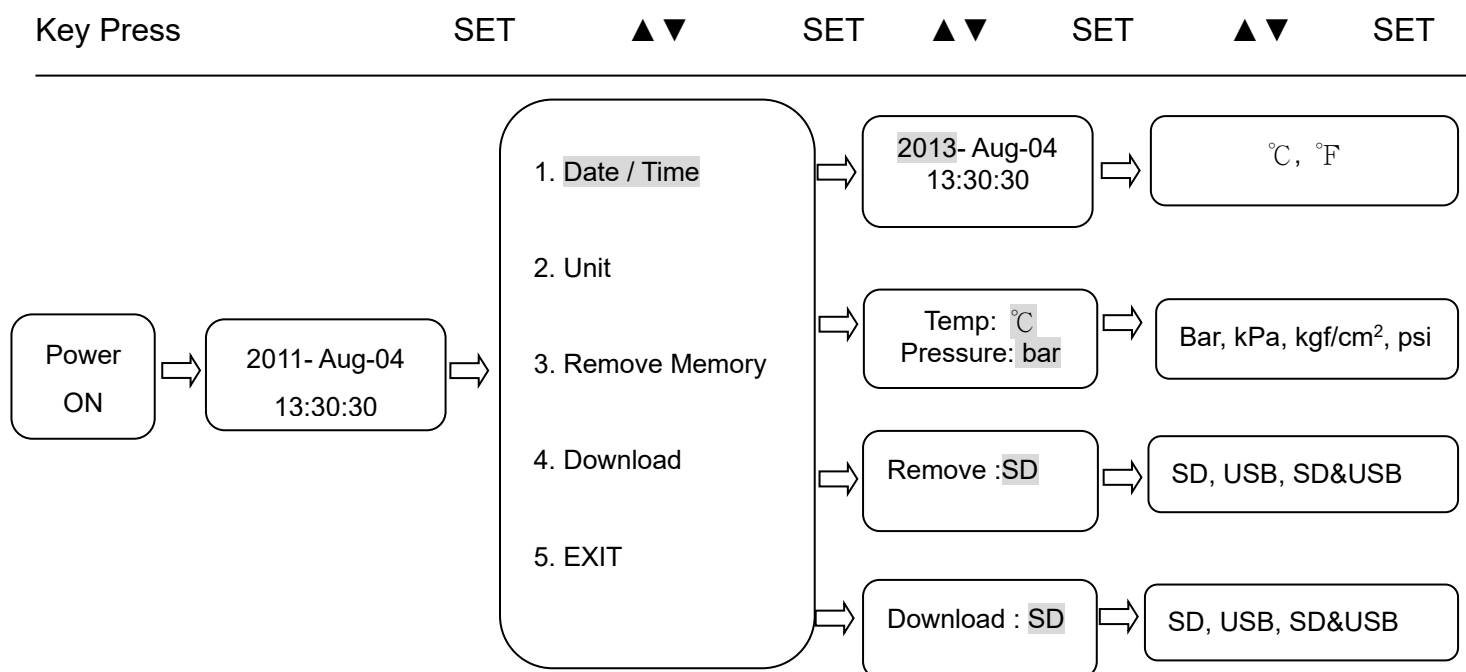


Figure 53

7.5.1 General

There are 3 types of operation modes for the recorder, they are stand-by mode, recording mode, and adjusting mode.

7.5.1.1 Stand-by mode

The date and time will be displayed after turn on the main power, and low battery symbol will flash for charging and/or low battery as shown in Figure 54.

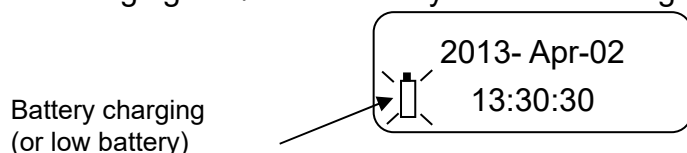




Figure 54

 **Note:** Call for service to replace the rechargeable battery if the exhaust battery symbol  presented after some cycles. After replacing and servicing, you have to set the date, time and unit again.

7.5.1.2 Recording mode

- a) Recording of the sterilization data is activated automatically after press “Start” button on autoclave panel, and then the chamber temperature and flashing message “Rec” will be displayed.

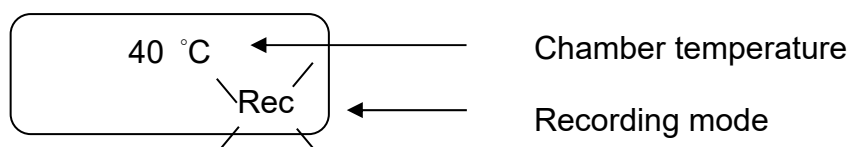




Figure 55

 **Note 1:** Insert a formatted SD card or formatted USB flash drive before commencing a sterilization cycle.

 **Note 2:** If none of the SD card nor USB flash drive being detected before commencing a sterilization cycle, the warning message “E105: No memory card” is presented and the buzzer alarmed. This message will not affect the operation of sterilization work because the data will be stored onto the built-in memory for one cycle. Refer to “7.5.2.4 Download” for the further instructions to download the data onto a SD card or USB flash drive.

- b) After completing a sterilization cycle, the data will be stored to SD card or USB flash drive; and the recorder returns to stand-by mode. The sequences of storage message

are shown in the Figure 56.

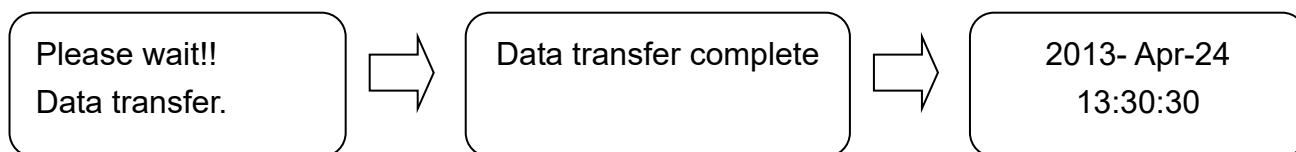




Figure 56

 Note 1: If none of the SD card nor USB flash drive being detected before completing a sterilization cycle, 2 warning messages “E105: (SD) No memory card” followed by a buzzer alarm, and “E105: (USB) No memory card” followed by a buzzer alarm are presented.

The warning messages do not affect the operation of recording work. Refer to “7.5.2.4 Download” for the further instructions to download the data onto a SD card or USB flash drive.

 Note 2: You may insert a SD card or USB flash drive before completing a sterilization cycle. Use a SD card and/or USB flash drive as the storage medium is highly recommended by the manufacturer, and always backup your SD card and/or USB flash drive to a secure zone.

7.5.1.3 Adjusting mode

Press “SET” button for adjusting the parameters of the recorder while in the stand-by mode.

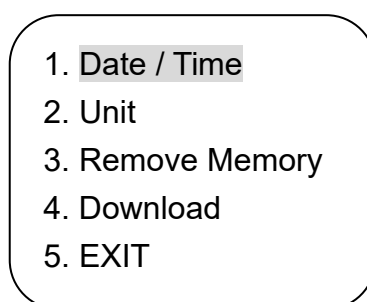



Figure 57 – Set manual

 Note: 1. The recorder returns to default stand-by mode after 15 seconds without any key been pressed in the “Set” manual.
2. The recorder returns to Set manual after 15 seconds without any key been pressed.

7.5.2 Set up

7.5.2.1 Set up date and time

Press “SET” button for adjusting the parameters of the recorder while in the stand-by mode. Press increase (▲) or decrease (▼) until “1. Date / Time” displayed and flashed as shown in Figure 58.

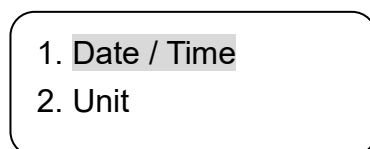


Figure 58

Press “Set” button for editing the contents, and then press increase (▲) and/or decrease (▼) button until current Date and Time presented.

The “Set” Button should be press for entering the parameter that you have changed, and shift to next parameter.

The sequence is in the order of Year-Month-Date-Hour-Minute-Second each time you press the “Set” button.

After entering the current Date and Time, press “Set” button returns to the Set manual, and then to choose “5 EXIT” press “Set” button again returns to the stand-by mode as shown in Figure 59.

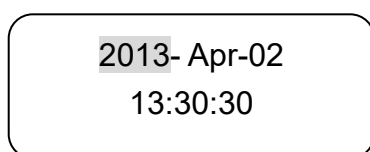


Figure 59

7.5.2.2 Set up unit (temperature and pressure)

Press “SET” button for adjusting the parameters of the recorder while in the stand-by mode. Press increase (▲) or decrease (▼) until “2. Unit” displayed and flashed as shown in Figure 60.

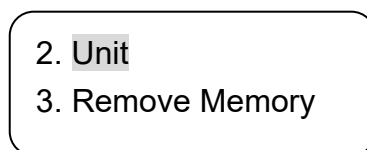


Figure 60

Press “Set” button for editing the temperature unit or pressure unit, and then press increase (▲) and/or decrease (▼) button until the desired temperature unit or pressure unit presented as shown in Figure 61.

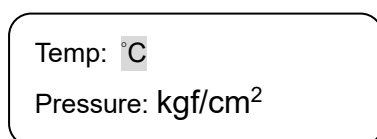


Figure 61

The sequence is in the order of Temperature - Pressure each time you press the “Set” button.

After entering the unit, press “Set” button returns to the Set manual, and then to choose “5 EXIT” press “Set” button again returns to the stand-by mode as shown in Figure 59.

7.5.2.3 Remove memory



Caution: The data may be damaged if not follow this operation to detach the SD card and/or USB flash drive properly.

Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until “3. Remove Memory” displayed and flashed as shown in Figure 62.

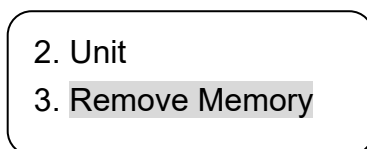


Figure 62

Press increase (▲) or decrease (▼) until the desired SD or USB presented. The sequence is in the order of SD-USB-SD&USB each time you press the increase (▲) or decrease (▼) button.

Press “SET” button, you will be prompt “Please remove Memory card”, and then you can detach designated memory card safely. This message will be lasted until you have detached the memory card.

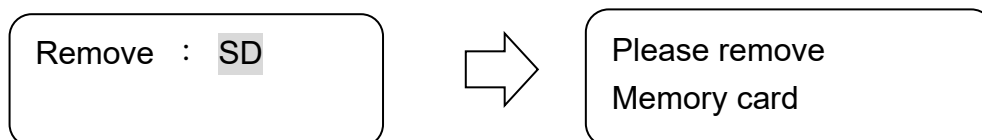


Figure 63

After entering the memory card, press “Set” button returns to the Set manual, and then to choose “5 EXIT” press “Set” button again returns to the stand-by mode as shown in Figure 62.

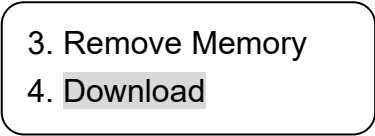
7.5.2.4 Download



Warning: The recorder can be operated without a SD card and/or USB flash drive, but the data stored in the recorder will be overwritten by next sterilization data. Use a SD card and/or USB flash drive as the storage medium is highly recommended by the manufacturer, and always backup your SD card and/or USB flash drive to a secure zone.

In case you have to operate the sterilization work without a SD card and/or USB flash drive, you must download the data by the following procedure.

Insert a formatted SD card and/or USB flash drive to appropriate port as shown in. Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until “4. Download” displayed and flashed as shown in Figure 64



3. Remove Memory
4. Download

Figure 64

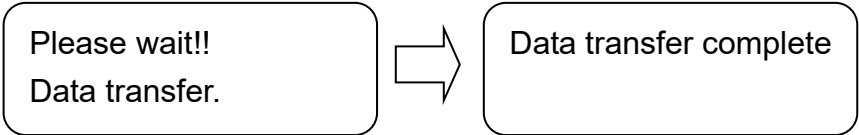
Press “SET” button and then press increase (▲) or decrease (▼) to select appropriate storage medium (SD–USB–SD&USB) as shown in Figure 65.



Download : SD

Figure 65

Press “SET” button, you will be prompt “Please wait !! Data transfer.” and then followed by “Data transfer complete” as shown in Figure 66.



Please wait!!
Data transfer.

Data transfer complete

Figure 66



- Note:
1. If none of the storage medium been detected, an error message “E105: No memory card” is presented and buzzer alarmed, the recorder than returns to previous manual after 15 seconds.
 2. If both SD and USB detected, the data will be downloaded to both SD and USB device in the order of SD and then USB device.

7.5.2.5 Exit

Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until “5. EXIT” displayed and flashed as shown in Figure 67.



Figure 67

Press “SET” button returns to the stand-by mode.

7.6 Error code and troubleshooting (for recorder)

Problem	Possible Cause	Solution
No display	<ul style="list-style-type: none"> - No power on. - Power cable damage. 	<ul style="list-style-type: none"> - Turn on the power switch. - Plug the power cable. - Check if bad connection. - Contact local distributor for service
E101: Sensor error	1) Sensor is bad contact or other reasons. 2) Start signal fail.	<ul style="list-style-type: none"> - Chamber temperature higher than 110°C, open the door of chamber to cool down. - Control signal fail, contact local distributor for service
E102: Over temp.	System gets over temperature.	<ul style="list-style-type: none"> - Contact local distributor for service
E105: No memory card	Can't writ to memory card.	<ul style="list-style-type: none"> - Insert a SD card or USB flash drive. - Detach and re-insert memory card again
E106: Write protect	Protect of function active for SD car.	Push the little slider on the side toward the golden-finger contact end of the SD card.
E107: The card is full	The card is full	The data stored on the medium have reached its maximum limit, please backup the storage medium onto a secure zone immediately, and then followed the procedure "7.5.2.4 Download" to download the last record.
E108: Wrong format	Different operating systems.	<ul style="list-style-type: none"> - Re-format the SD card or USB flash drive. - Replace another SD card or USB flash drive. - Contact local distributor for service
E109: Memory fail	Bad memory card.	<ul style="list-style-type: none"> - Replace another SD card or USB flash drive. - Contact local distributor for service
E120: Low battery	Long time no charge.	Contact local distributor for replacing rechargeable battery.
E125: Keyboard fail	Bad contact or other reasons.	Contact local distributor for service
E130: Calibration data Fail	Calibration data is incorrect	Contact local distributor for service

E135: Power fail during the cycle	Lose power during running.	<ul style="list-style-type: none"> - Check the power supply to the Autoclave. - Contact local distributor for service
E155: Password fail	Password error.	Authorized person only. This function is reserved for diagnostic purpose by the manufacturer, users are password protected. Contact local distributor or manufacturer for information.



Caution: Contact local distributor for service if encountered any other problems. Do not attempt to disassemble the sterilizer or recorder by yourself. Failure to do so could result in serious injury or damage to the unit.

8. Maintenance Instructions



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



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.

8.1 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 water level. Top up with distilled water only.
- Ensure the vent holes in the water reservoir cap (Figure 32) are not blocked.
- Check the status of the power cord. Call for service if breakage comes up.

8.2 Weekly

- Clean the box, tray frame and trays with detergent, or a non-corrosive stainless steel cleaner and water, using cloth or sponge.
- Replace the distilled water in water reservoir:
Drain water from the water reservoir using Water Level/Drain Hose (Figure 32) located on the right side of the unit. Fill clean distilled water.

Clean the filter. Use a wrench to unscrew the filter nut counterclockwise as Figure 68 and Figure 69.

Caution: Place a towel underneath the filter tap to avoid leakage.

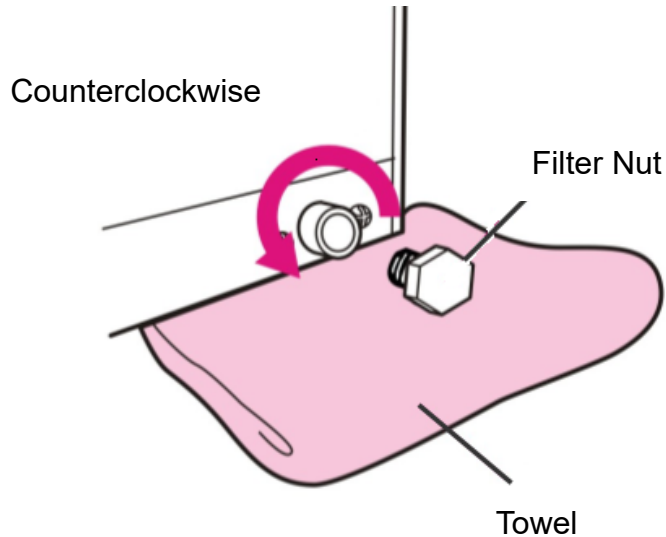


Figure 68

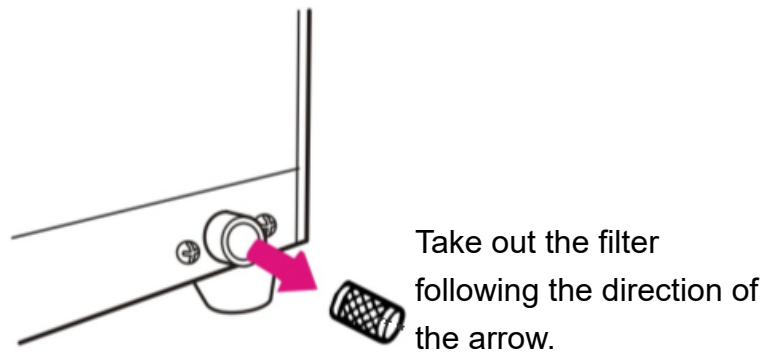


Figure 69

Take out the filter carefully, and flush it with water to clean it. Assemble it back as Figure 70.

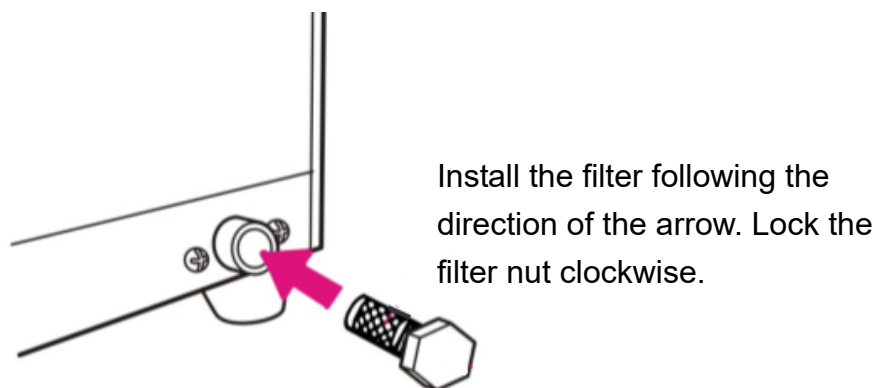


Figure 70

9.3 Monthly

- Use the non-corrosive cleaner and stiff bristled brush or sponge to clean the water level sensor at the rear of the chamber as Figure 71.



Caution: Clean the dirt off from the sides of the sensor is more important than the tip. Use a damp cloth to wipe the surface after cleaning.

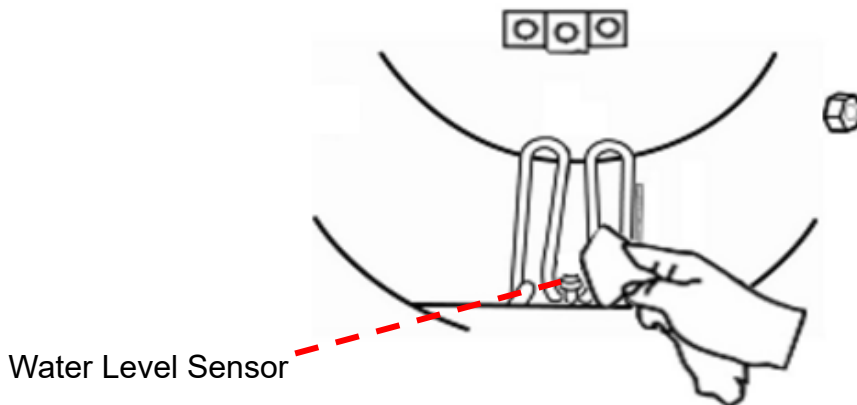


Figure 71

- Clean the chamber and piping system with “CHAM-MATE” following the instructions on the sachet.
- Check the safety valve

Turn off the power and unplug the sterilizer. Remove the water reservoir cap as Figure 72. Use a screw driver to pull the metal ring of the safety valve for approx. 3 seconds; then release. Perform the check 3 times. Put the water reservoir cover back.



Warning: If excessive force is required to pull the safety valve, it must be replaced. Call for service.

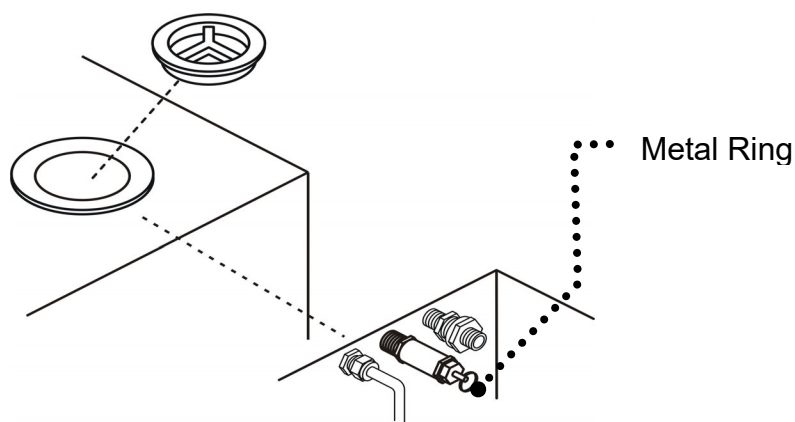


Figure 72

9.4 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.

- Calibrate the temperature during sterilization process. (Use biological indicators to test the validity of sterilization)
- Check if there's any leakage of the piping.
- Check if the Process Status Indicator lights are functioning normally.
- Check the working status of steam trap, safety valve, and heater.
- 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.

9.4.1 Silicone door gasket

1. Remove the gasket assembly from the door groove, and then take out the door gasket frame, door gasket plate from the old gasket. Install the door gasket frame, door gasket plate to the new gasket as shown in Figure 73 °

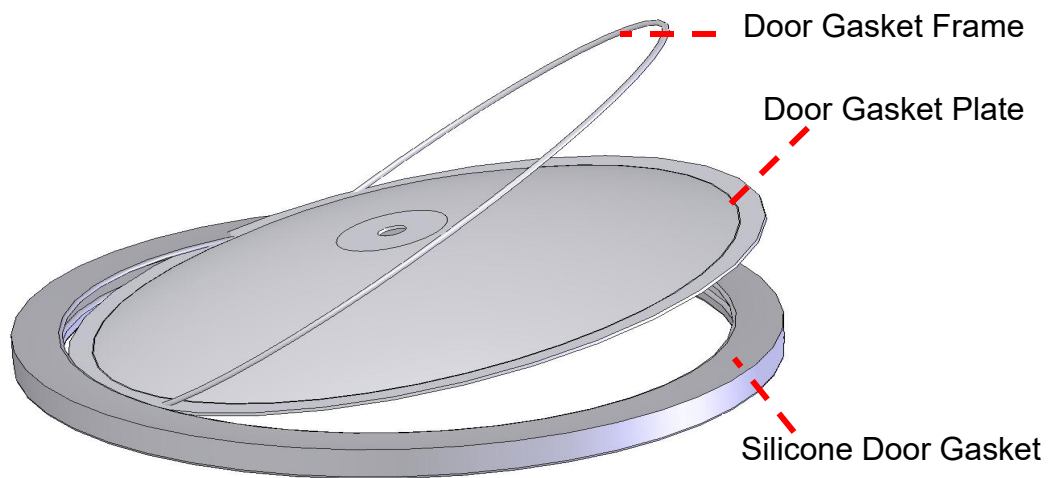


Figure 73

2. Check if the door gasket frame, door gasket plate are installed into the gasket completely as shown in Figure 74.

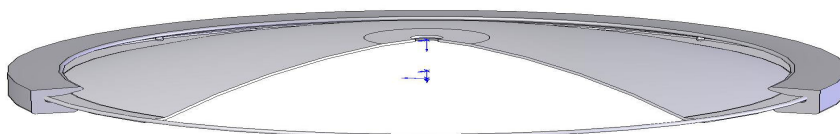


Figure 74

3. Install the gasket with the door gasket frame, door gasket plate inside to the door groove. Press the gasket into the door groove evenly as shown in Figure 75. Take thick end of silicone door gasket of the installation direction while pressing the gasket into the groove. Refer to Figure 76 for the correct direction.

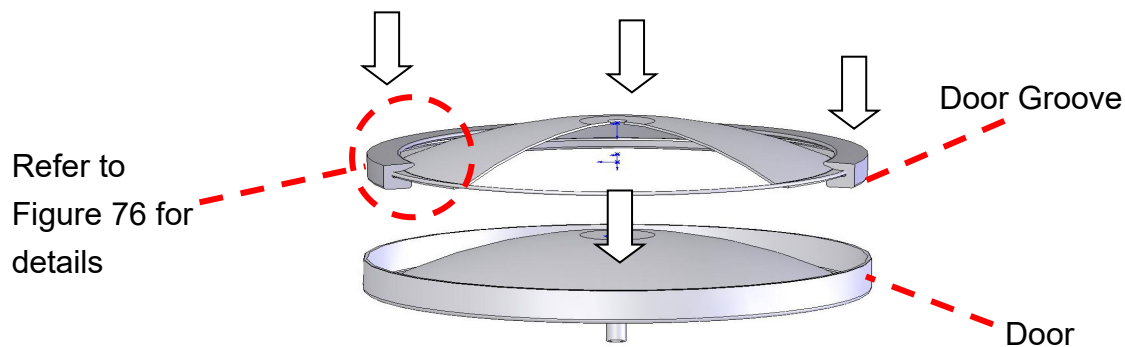


Figure 75

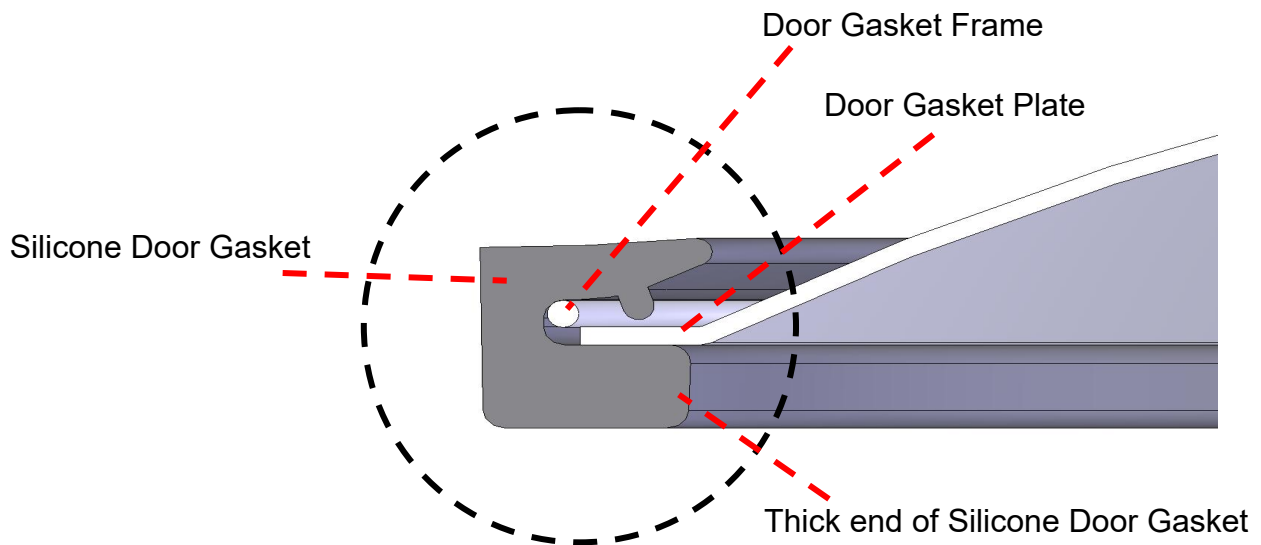


Figure 76

⚠ Caution: Assembly direction - toward the thick end of the Door Groove.

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

10. Troubleshooting

10.1 Symptoms

Problem	Possible Cause	Solution
Power indicator isn't illuminated	The main cable is unplugged or the socket switch is off.	Plug in the sterilizer and turn on the socket switch.
	Forget to turn on the switch.	Press the Power switch to ON "I" position.
	No Fuse Breaker tripped.	Wait till the sterilizer cool down the room temperature. Press the buttons of two No Fuse Breakers on rear of unit to reset.
Low water indicator light ON and buzzer sounds	Insufficient water inside the water reservoir	Follow "4.2 " to refill distilled water.
	Water level sensor inside chamber	Follow "9.3 Monthly" maintenance to clean the sensor.
	Filter blocked	Follow "8.2 Weekly" maintenance to clean the filter.
	Water level sensor inside water reservoir	Contact local distributor for service.
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 "8.4 Annually" maintenance to replace it.
Door cannot be opened	Pressure persists inside chamber	Follow "6.8" to press the Vacuum Release Button" and release the pressure. Contact local distributor for service if problem persists.
Water inside chamber doesn't automatically return to the reservoir	1. Piping system of filter blocked.	1. Contact local distributor for service.
	2. Faulty exhaust solenoid valve.	2. Contact local distributor for service.
	3. Liquid program performed. (*Optional program)	3. Run "Normal" program to let the water inside chamber return to the water reservoir.
Excessive force is required to pull the safety valve	1. Do not use the tool.	1. Please use the tool (e.g. screw driver or pliers) to pull the ring.
	2. Faulty safety valve	2. Contact local distributor for service.



Caution: Contact local distributor for service anytime if encountered other any other problems. Please do not attempt to disassemble the sterilizer by yourself Failure to do so could result in serious injury or damage to the unit.

10.2 List of Error Codes (for autoclave)

ERROR CODE	Description
E01	K-type sensor in chamber is out of connection (Emergency light illuminates)
E02	The door is not closed completely (Door light illuminates)
E03	Sterilization temperature over than 137°C (Emergency light illuminates)
E04	The water tank is in LOW WATER condition (LOW-WATER light illuminates)
E05	Water in the chamber is not enough in first 5 min. during add-water step.
E06	Sterilization temperature down under than 2°C over 5 min. in sterilization step (EMERGENCY light illuminates)
E07	EMERGENCY water/pressure exhaust (EMERGENCY light illuminates)
E08	Jumper open- Error message displayed after vacuum pump operated for 10 min.

11. Specifications

Model	SA-300FA
Chamber Capacity (L)	40
Maximum Instrument Length (mm)	525
Maximum Load (unpouched) (g)	9000
Maximum Load (pouched) (g)	1600
External Dimensions (mm)	766(D) × 620(W) × 489 (H)
Chamber Size (mm)	300 Diameter × 570 Depth
Gross Weight (kg)	75
Power	220V-240V AC, 50/60Hz, 10A
Wattage	2300W for main heater 826W for band heater
Fuses	15A × 2, No Fuse (circuit) Breaker
Water Reservoir Capacity (ml)	8400
Water Capacity per Cycle (ml)	1000 ~1200
Sterilization Temperature (°C)	121 / 135
Working Environment	<ul style="list-style-type: none"> ● Indoor use; ● Under 1,000m (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
Transportation Conditions	-10°C to 70°C, 10%RH to 90%RH
Storage Conditions	-10°C to 50°C, 10%RH - 70%RH
Over Pressure Protection	Safety valve 2.6 kgf/cm ² (2.55 bar)
Over Pressure Indication	Pressure protection switch with warning LED
Over Temperature Indication	Independent temperature protection device with warning LED
Water Level Indication	Water level sensor in reservoir and chamber with warning LED
Door Lock Indication	Micro switch sensor with warning LED
Pressure Display	Analog pressure gauge
Function Display	LED
Program Selections	Wrapped/unwrapped, Dry/no dry, Re-Dry (or Liquid)*. * Optional function by order request
Temperature Selection	121°C/135°C
Drying Function	30 min. (Re-Dry: 10 min.)
Additional controls	Start, Reset, Vacuum/Pressure release

12. Warranty

WARRANTY

Your “**Autoclave Sterilizer**” 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 Manufacturer is limited to repair or replacement and under no circumstances shall “**Autoclave Sterilizer**” 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 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: _____

Name	Sturdy Autoclave Sterilizer		
Model	SA-300FA		
Manufacturer 	Sturdy Industrial Co. Ltd.		
Address	No. 168, Sec. 1, Zhongxing Rd., Wugu District, New Taipei City, 24872, Taiwan		
EC Representative <table border="1" data-bbox="276 1832 368 1870"> <tr> <td>EC</td> <td>REP</td> </tr> </table>	EC	REP	APEX MEDICAL S.L. Elcano 9, 6 ^a planta 48008 Bilbao. Vizcaya SPAIN
EC	REP		