

“Sturdy” Autoclave Sterilizer

SA-300H

Instruction Manual

PLEASE READ THE INSTRUCTION MANUAL BEFORE USE.


SAVE THIS MANUAL FOR REFERENCE.


CE₂₄₆₀


CONTENTS


1. IMPORTANT SAFETY INSTRUCTIONS	2
2. EXPLANATION OF SAFETY SYMBOLS AND NOTES.....	4
3. UNPACKING	5
4. INSTALLATION	6
4.1 ENVIRONMENT	6
4.2 INSTALL THE STERILIZER	6
5. INTRODUCTION	11
5.1 INTENDED USE	11
5.2 DESCRIPTION OF THE STERILIZER	11
5.2.1 External View	11
5.2.2 Internal Configuration	12
5.2.3 Control Panel (Re-Dry Program)	13
6. OPERATION.....	14
6.1 OPERATION OVERVIEW	14
6.2 NORMAL STERILIZATION PROGRAM	15
6.3 EMERGENCY STOP	17
6.4 RE-DRY PROGRAM	17
6.5 PLACEMENT FOR ITEMS TO BE STERILIZED	19
6.5.1 Sterilization for Implements.....	19
6.5.2 Sterilization for Wrap.....	21
6.5.3 Placement for sterilization box.....	21
7. MAINTENANCE INSTRUCTIONS	23
7.1 DAILY	23
7.2 WEEKLY	23
7.3 MONTHLY	25
7.4 ANNUALLY	26
8. TROUBLESHOOTING	27
9. SPECIFICATIONS.....	28
10. WARRANTY	29


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.


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


 **Warning:** Steam and hot water will be present when opening the door after a sterilizer cycle. Avoid contact, causing personal injury.


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


 **Warning:** DO NOT place any objects on the top of the sterilizer.


 **Warning:** It will require at least two (2) or more people to carry the sterilizer to avoid dropping it off.


 **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.


 **Warning:** Always allow a minimum of 20 minutes between each sterilization cycle.


 **Warning:** The door must be closed completely during operation of the unit. If the "DOOR" indicator light illuminates, it means that the door is not closed properly.



 **Warning:** Clean the water filter located at the back of the unit at least once per month. Refer to Maintenance Instructions.


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


 **Warning:** 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.


 **Warning:** 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.


 **Warning:** The ADD WATER indicator light (see "Figure 17") will illuminate during the sterilization cycle. This is part of normal operation and no action on the part of the user is required.


 **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.


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


 **Warning:** Always keep the sterilizer clean.

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












 **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.

 **Warning:** Unplug the supply cord and drain off water from the reservoir if the sterilizer will not be used for a long-term.


 **Warning:** Always check the status of the supply cord for any damages; unplug the supply cord if breakage comes up. Contact your supplier for service support.

 **Warning:** Use only the “Emergency” Button to release the chamber pressure if power failure happened. And re-conduct the sterilization cycle again.

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
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 to or destruction of the equipment or other property.
WARNING	Indicates correct operating or maintenance procedures in order to prevent damage to 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.

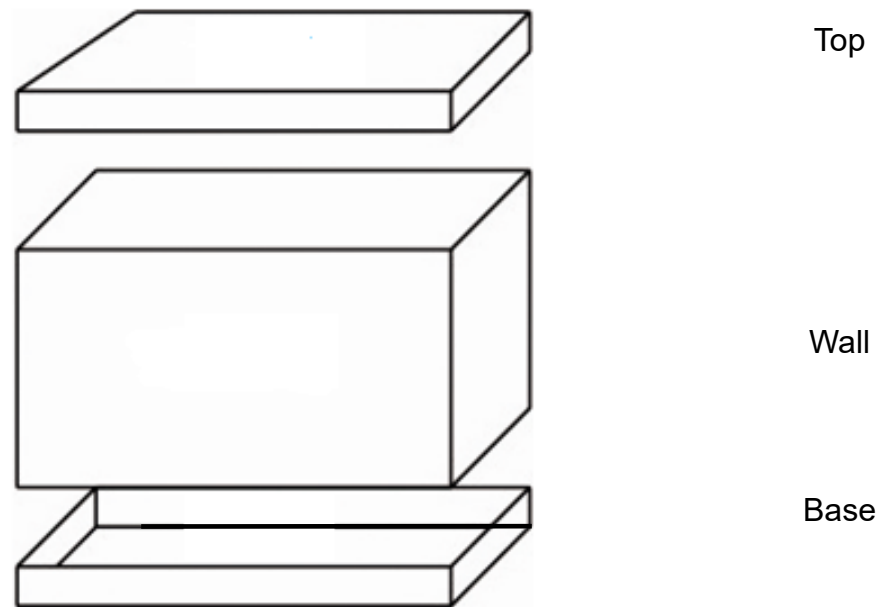


Figure 1 – Packaging

- 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 (Optional)*
- Tray Frame × 1 (Optional) *
- Tray × 3 (Optional)*
- Holder × 1 (Optional)*
- Spring Pouch Rack (Optional)*

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

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

4. Installation

4.1 Environment

This equipment has been designed for use in accordance with the 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 "9. Specifications".

4.2 Install the sterilizer



Caution: Please read and follow "5.2" on Page 11 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 "9. Specifications".



Caution: Position the sterilizer on a stable laboratory 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.

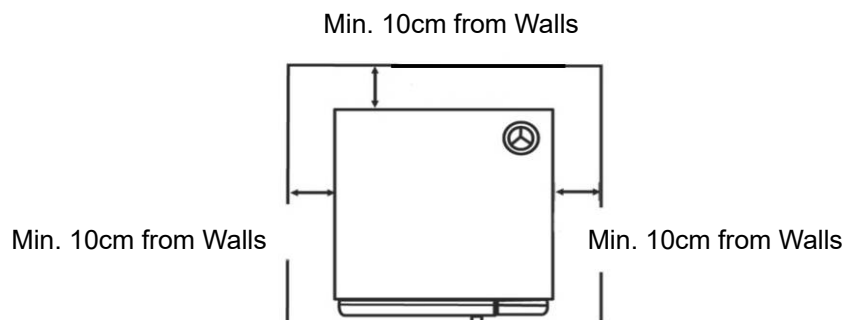


Figure 2



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 3.

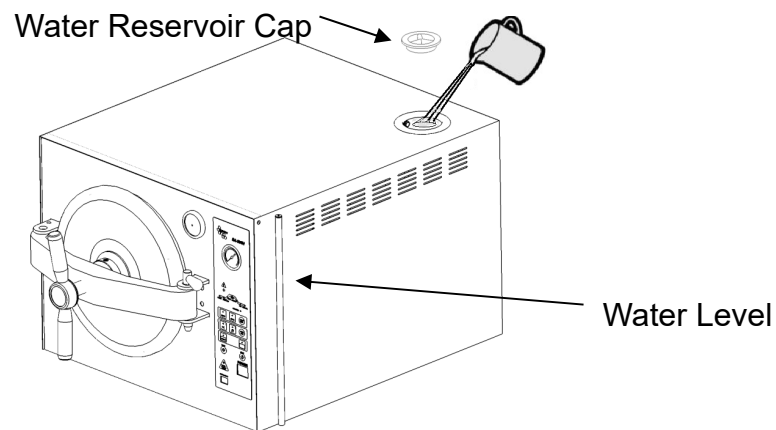


Figure 3

Caution: Please fill Distilled Water Only into the unit. Take care not to overfill the yellow water level mark as “Figure 4” and “Figure 10”.

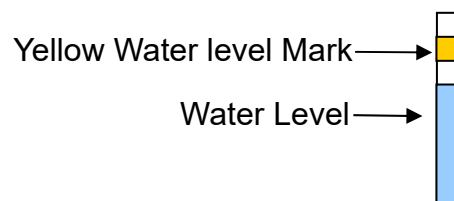


Figure 4

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 after Liquid program performed.)

- B. Install the heater cover to the chamber as Figure 5 – Heater Cover (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.

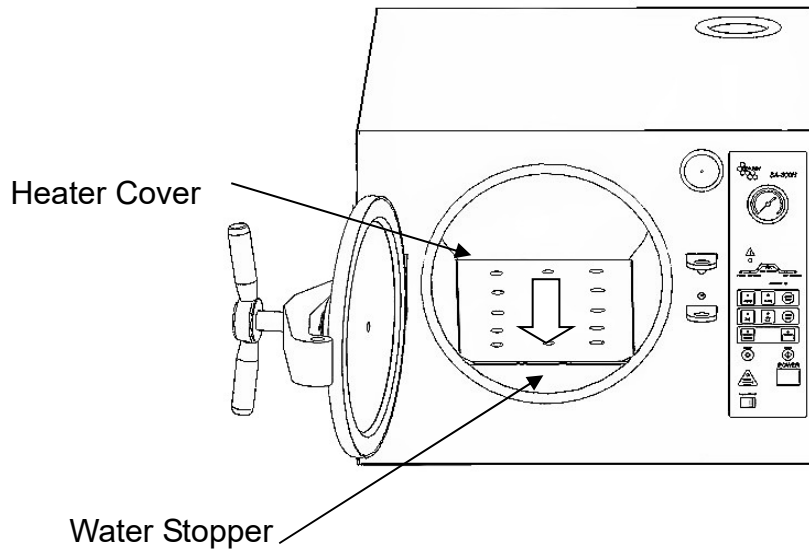


Figure 5 – Heater Cover

- C. Install the Sterilization Box as Figure 6 – Sterilization Box. (optional accessory)

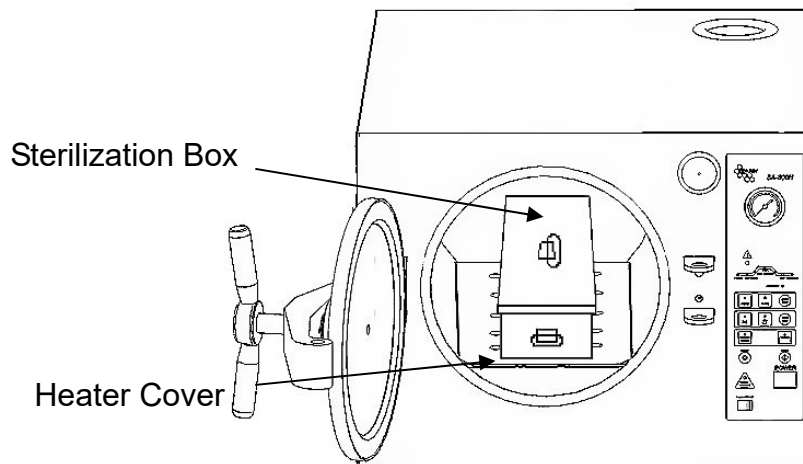


Figure 6 – Sterilization Box

- D. Install the tray frame as Figure 7 – Tray Frame. (optional accessory)

⚠ Caution: The frame should be installed as Figure 7 – Tray Frame below.
The indentation of the frame will pass the bushing in the chamber.

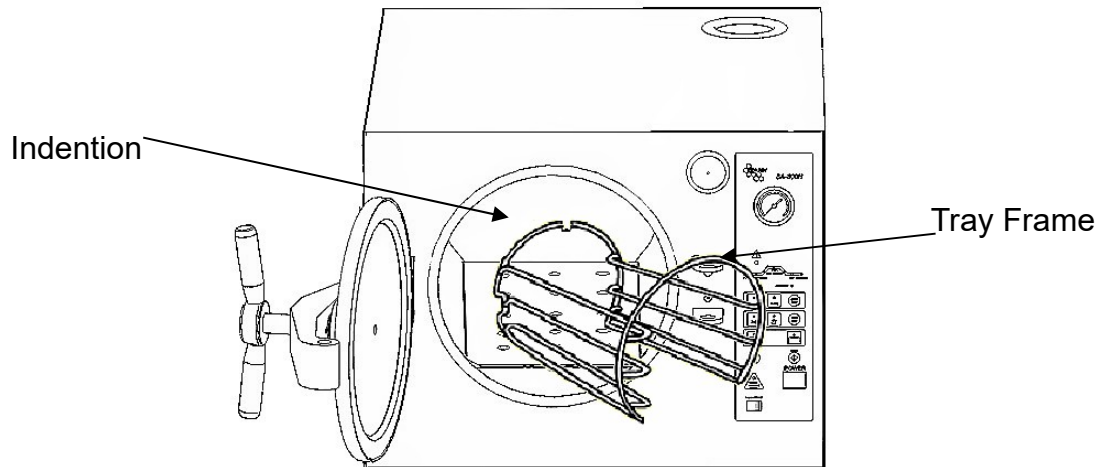


Figure 7 – Tray Frame

- E. Install the tray as Figure 8 – Tray. (optional accessory)

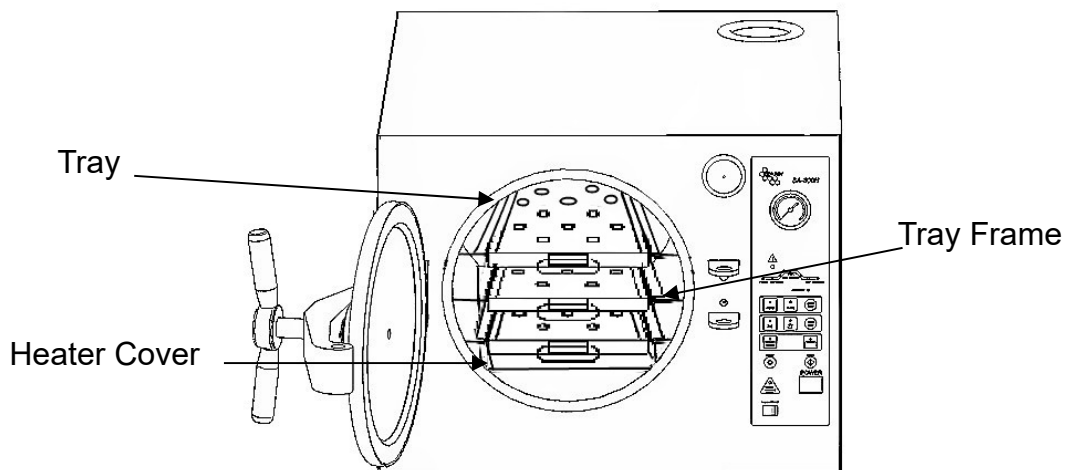


Figure 8 – Tray

- F. Install the spring holder as Figure 9. (optional accessory)

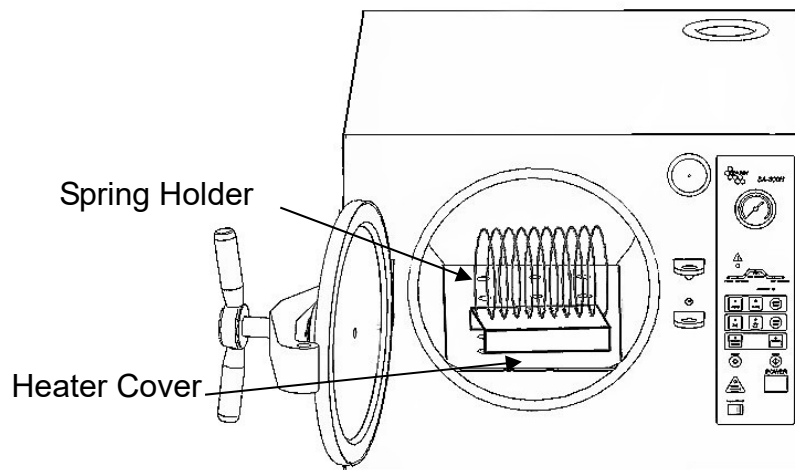


Figure 9

Close the door and secure by the steel-support pin, and then turn the handle clockwise to lock.

Ensure the Power Switch is in OFF “O” position, and then plug the supply 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 15 A / 230V AC.

Warning: This equipment must be earthed.

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

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. 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.

5.2 Description of the Sterilizer

5.2.1 External View

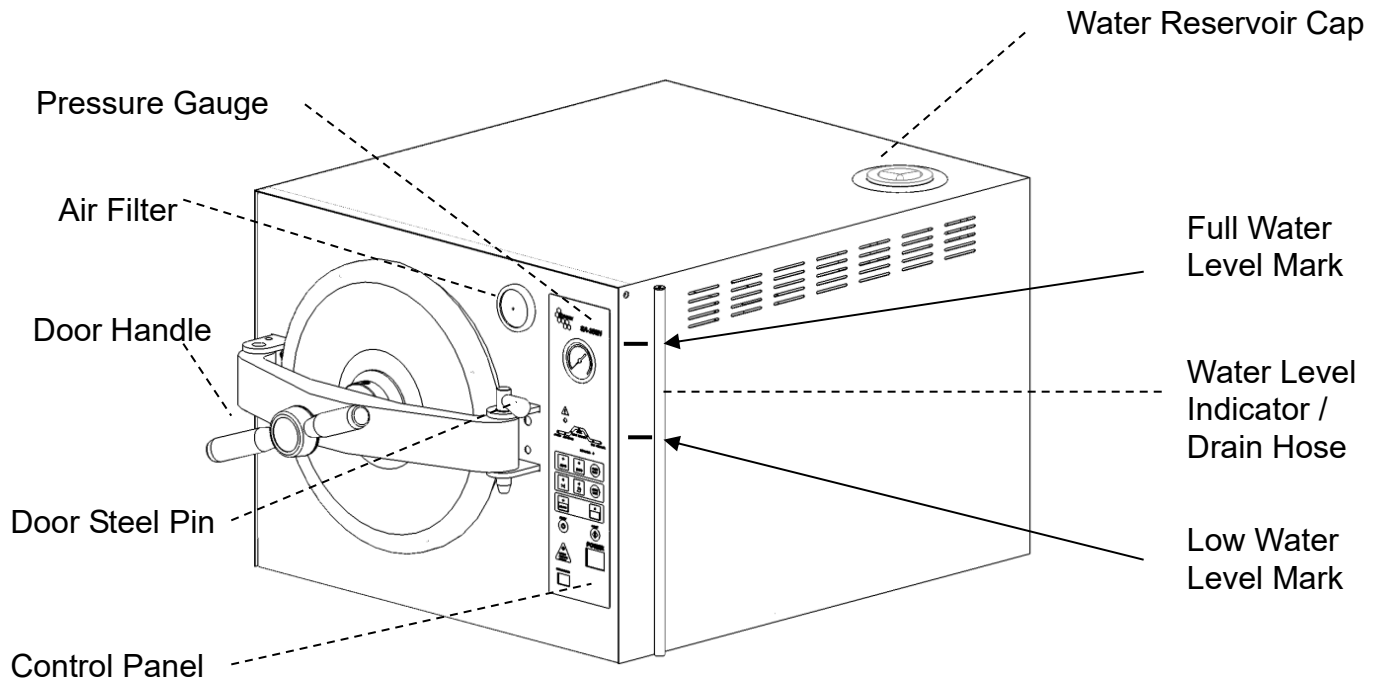


Figure 10 – Front View

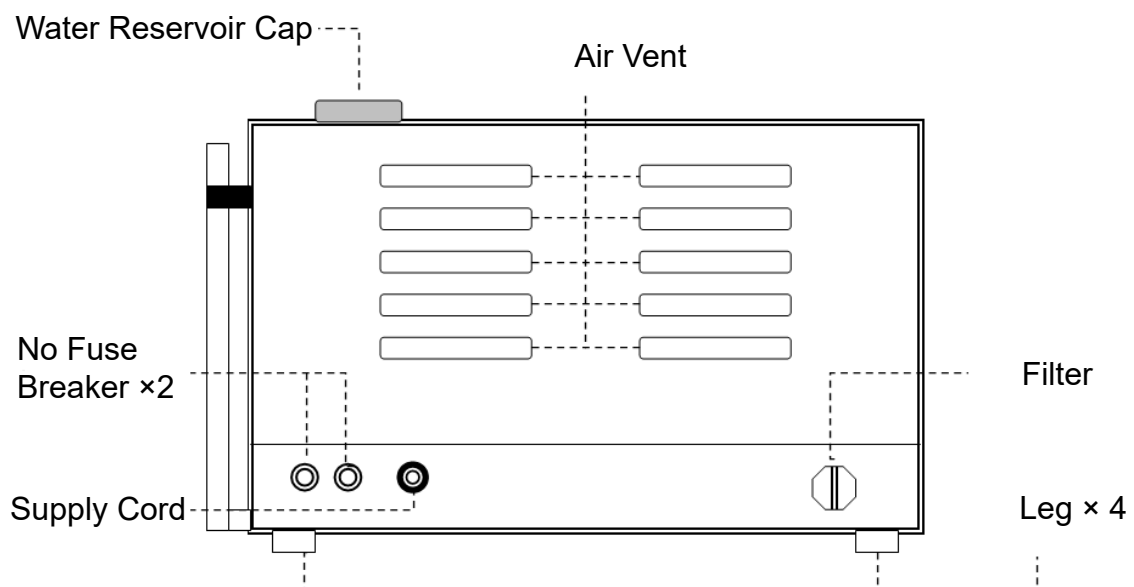


Figure 11 – Rear View

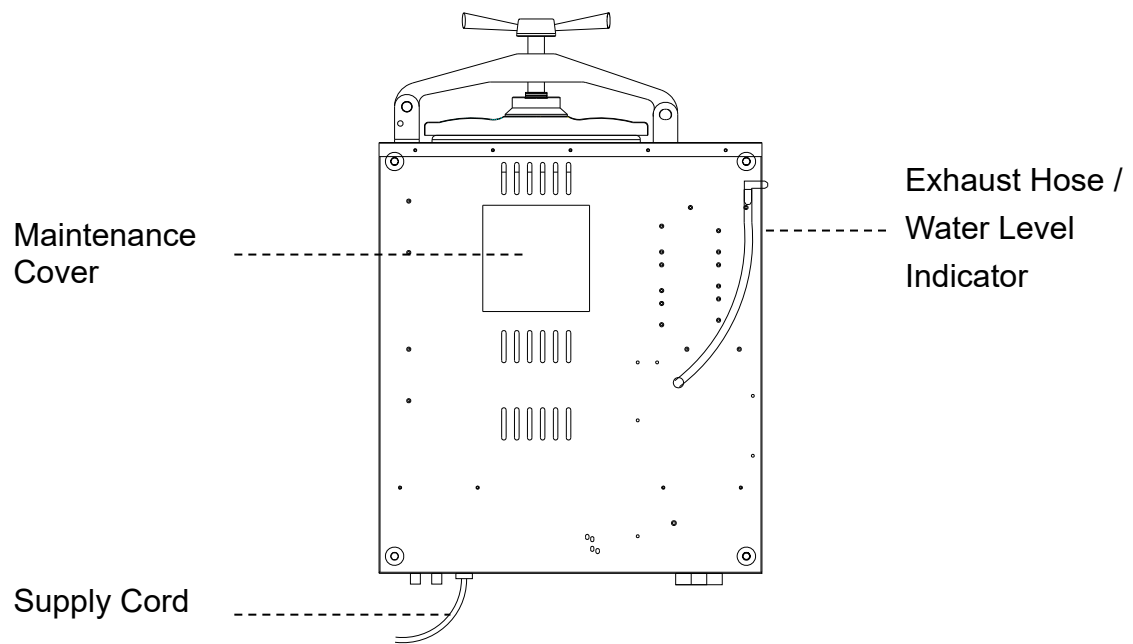


Figure 12 – Bottom View

5.2.2 Internal Configuration

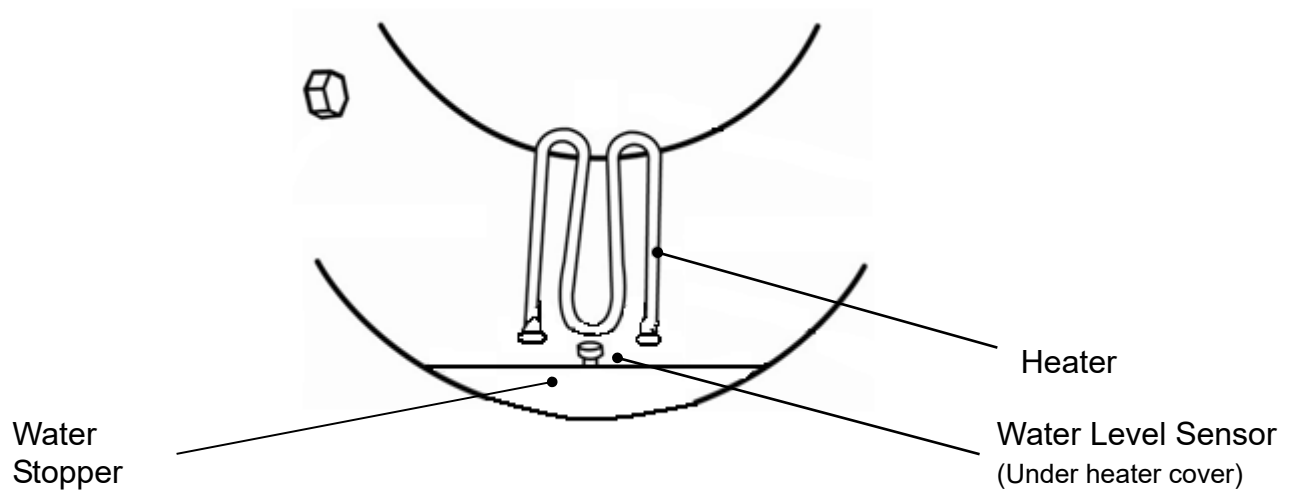


Figure 13 – Inside of Chamber

5.2.3 Control Panel

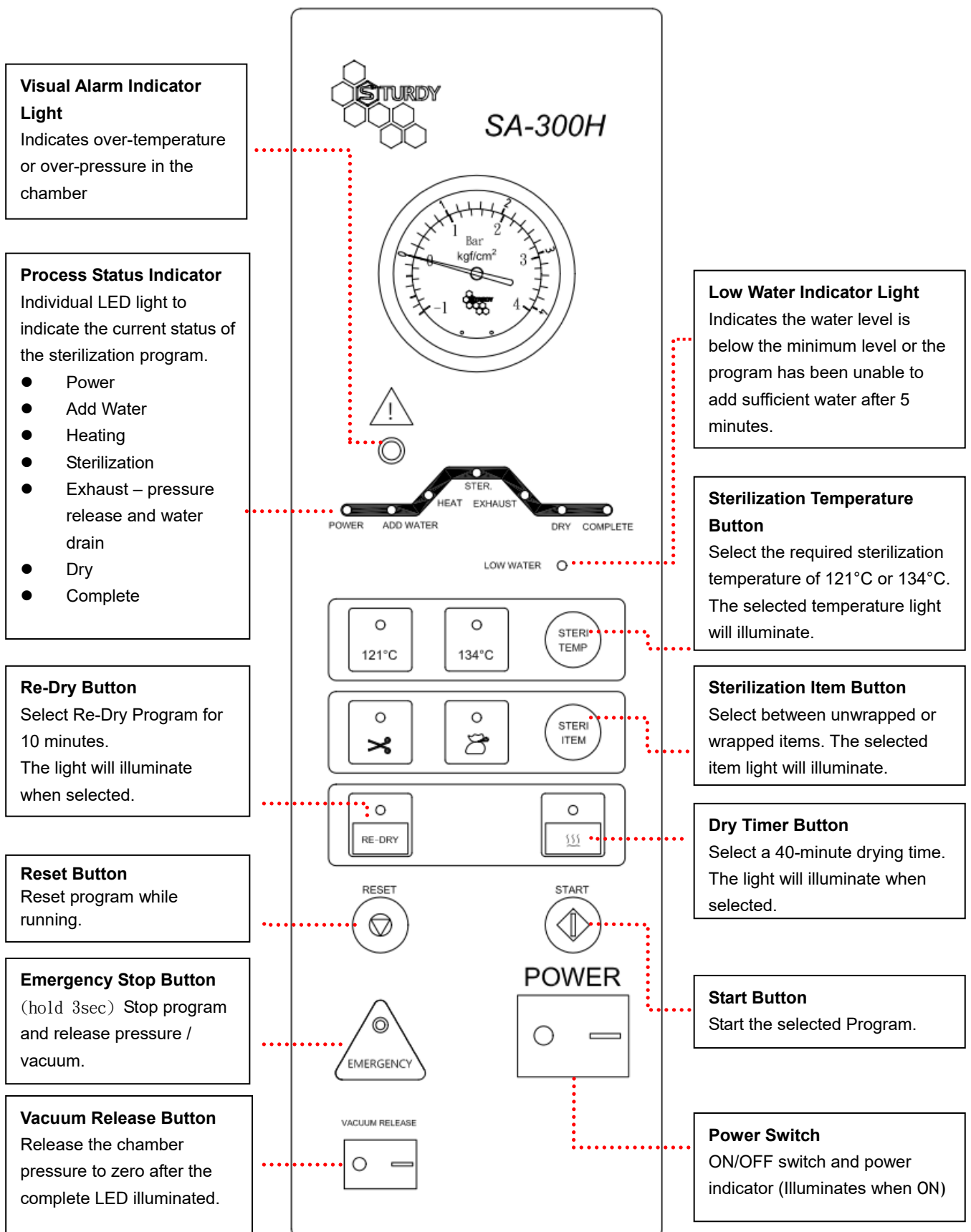
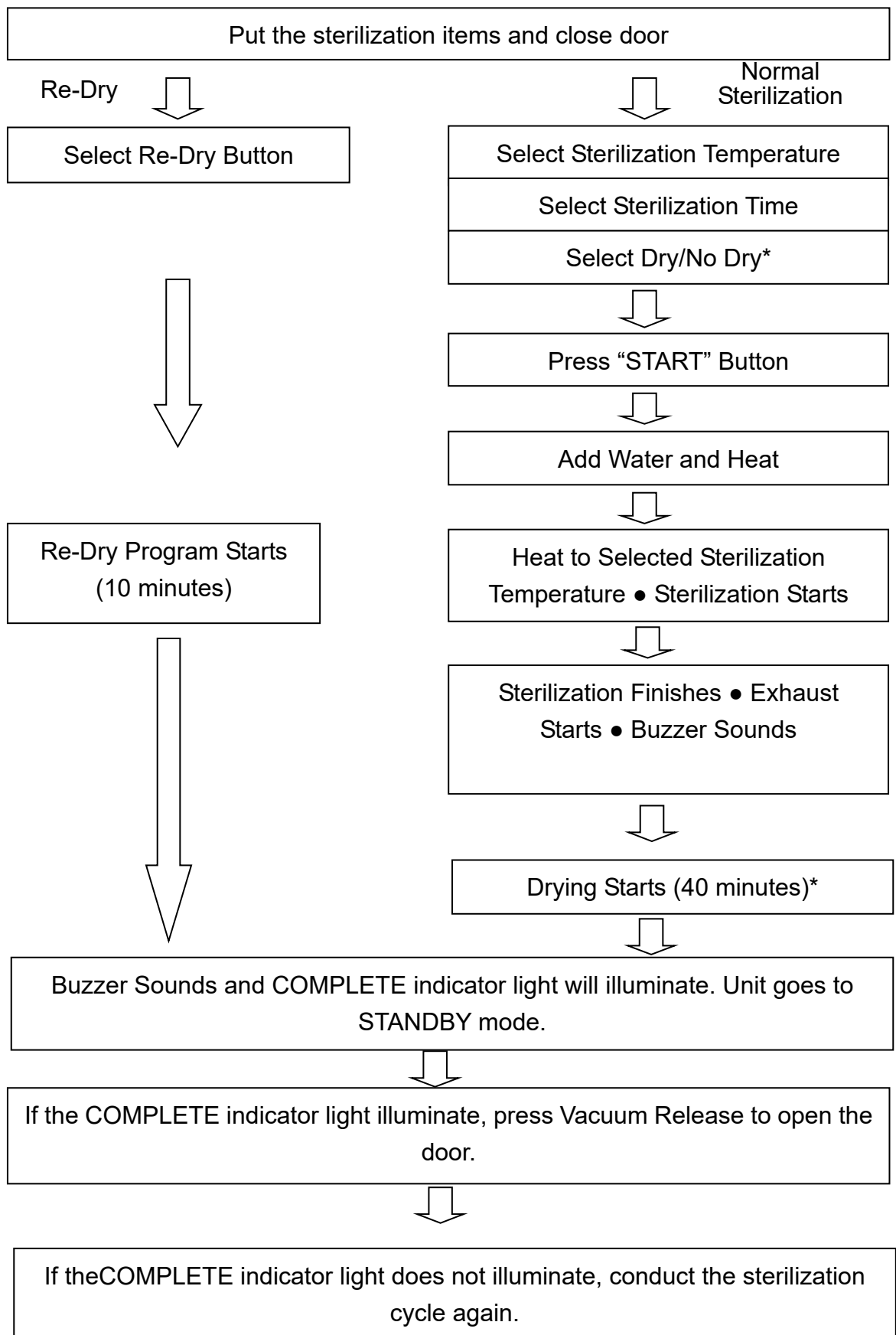


Figure 14 – Control Panel

6. Operation

6.1 Operation Overview



*If dry timer selected.

6.2 Normal Sterilization Program

- A. Follow “Chapter 4. Installation” to complete 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 handle counterclockwise.
- D. Place the items to be sterilized and the sterilization indicator strips into the box as required. Remember to open both side windows before placing the box into the sterilizer as Figure 14.

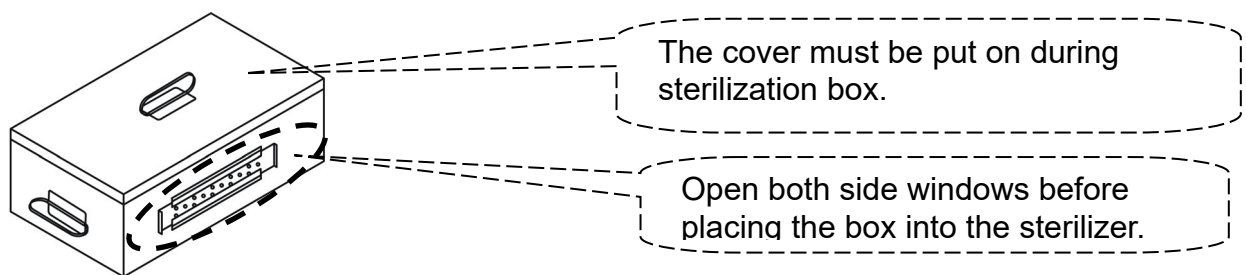


Figure 15



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



Warning: Refer to “9. Specifications” for the maximum permissible load.

Failure to follow these instructions may cause the sterilizer to malfunction and result in an unsuccessful sterilization cycle.



Warning: Use only the “Vacuum/Pressure Release” Button to release the chamber pressure if power failure happened. And re-conduct the sterilization cycle again.

- E. Close the door and turn the handle clockwise to lock.
- 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 normal program:

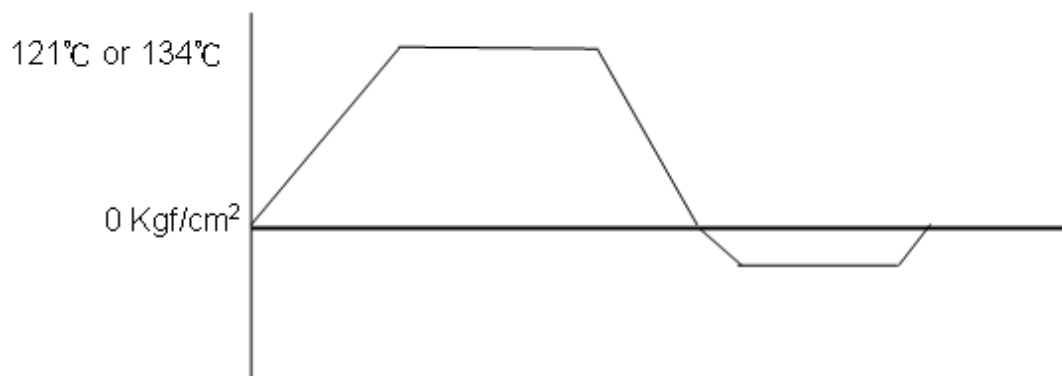




Figure 16

G.1 Press “STERI TEMP”  to select 121°C or 134°C

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

	Sterilization Temperature 121°C	Sterilization Temperature 134°C
Unwrapped	22 mins	4 mins
Wrapped	30 mins	15 mins

G.3 Press Dry Timer Button  to select a 40-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 17)





Figure 17


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.


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

G.5 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”.


 **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 Emergency Stop


Emergency Stop : Emergency 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.

6.4 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.

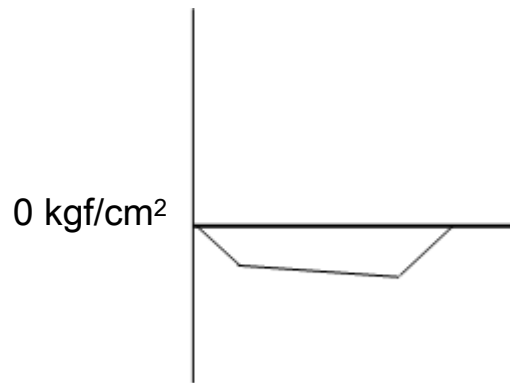




Figure 18

 **Warning:** Use only the “Emergency” Button to release the chamber pressure if power failure happened. And re-conduct the sterilization cycle again.

6.5 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.

6.5.1 Sterilization for Implements

Place implements on the tray evenly according to Figure 19. Do not pile up nor overlap each implement.

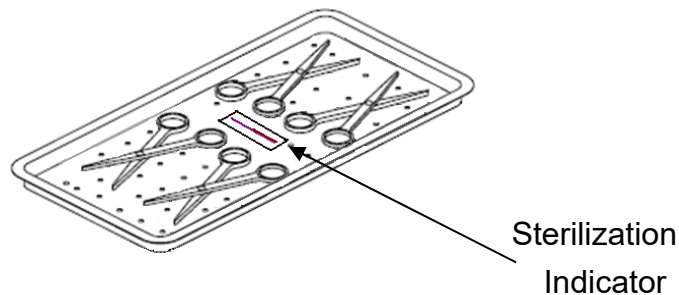


Figure 19



 **Warning:** If implements are packed with sterilizing pouches, please make sure not to pile them up. Follow Figure 20 for correct placement and do not overlap pouches like Figure 21 to ensure the sterilization quality.



Figure 20



Figure 21

 **Warning:** We suggest using Spring Holder for items with sterilizing pouches to assure sterilization result. Follow Figure 22 or Figure 23 to place

each pouch separately. Spring holder is available as an optional accessory.

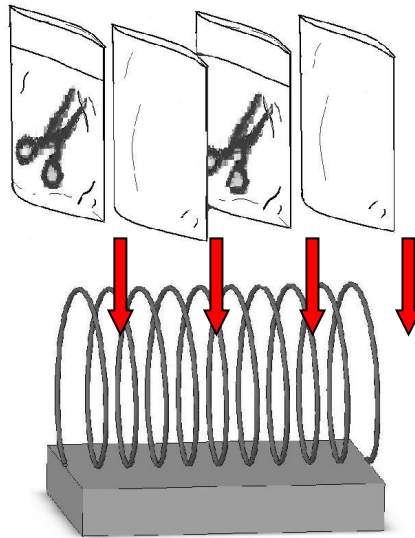


Figure 22

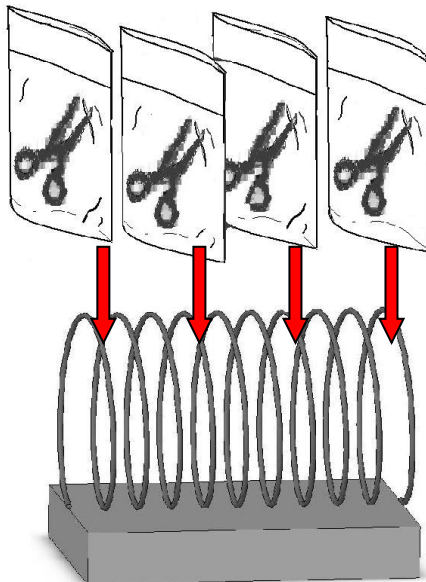



Figure 23

 **Warning:** If implements are packed with sterilizing pouches and placed inside a sterilization box, make sure to display items as Figure 24.

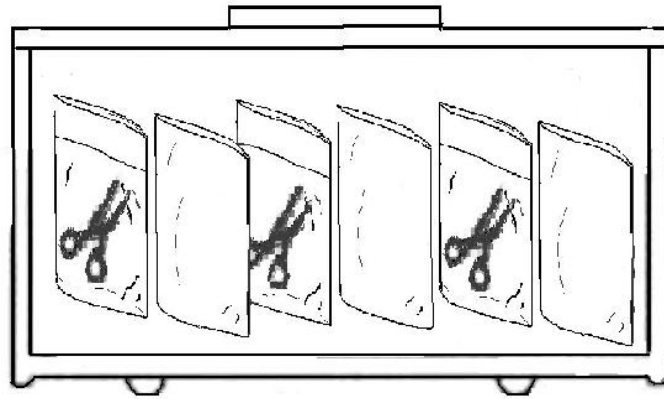


Figure 24

6.5.2 Sterilization for Wrap

Warning: To sterilize absorbent cotton or woolen, please wrap it with a thick towel, covering cloth, linen, or sterilizing pouch to avoid piping clog according to Figure 25.

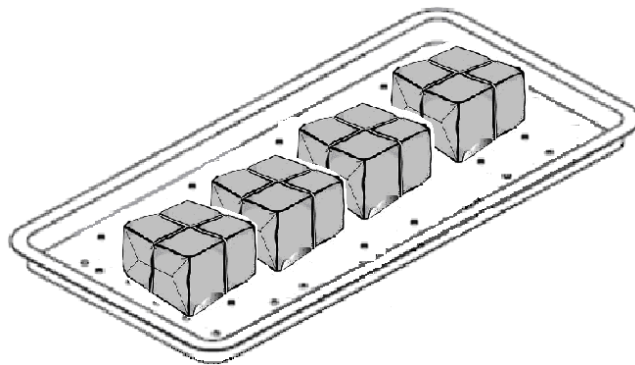


Figure 25


- 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.

6.5.3 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 26

 **Warning:** Please follow Figure 26 and place wrap vertically inside the sterilization box.

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 water level. Top up with distilled water only.
- Ensure the vent holes in the water reservoir cap (see “Figure 11 – Rear View”) are not blocked.
- Check the status of the supply cord for any damages; unplug the supply cord if breakage comes up. Contact your supplier for service support.

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.
- Replace the distilled water in water reservoir:

Drain water from the water reservoir using Drain Hose (see “Figure 3”) 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 27 & Figure 28.

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

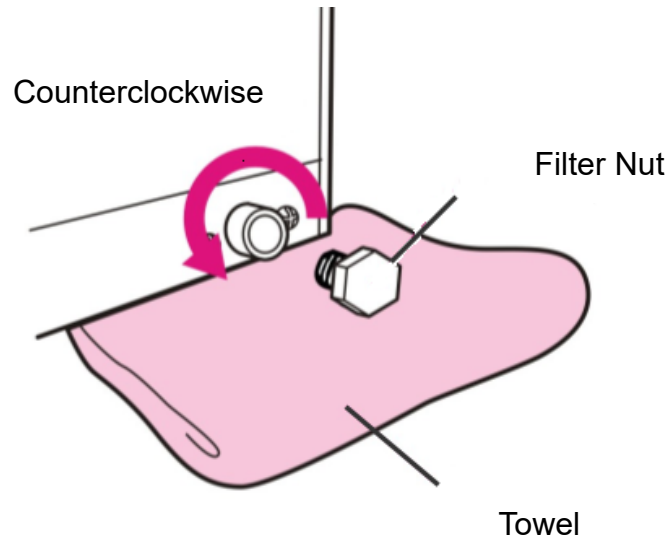


Figure 27

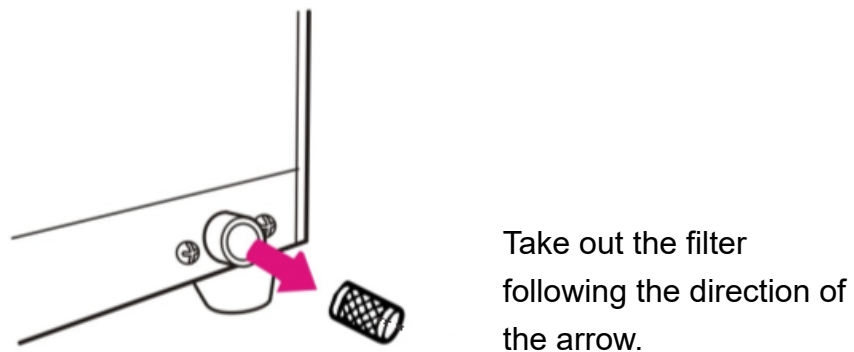


Figure 28

Take out the filter carefully, and flush it with water to clean it. Assemble it back as Figure 29.

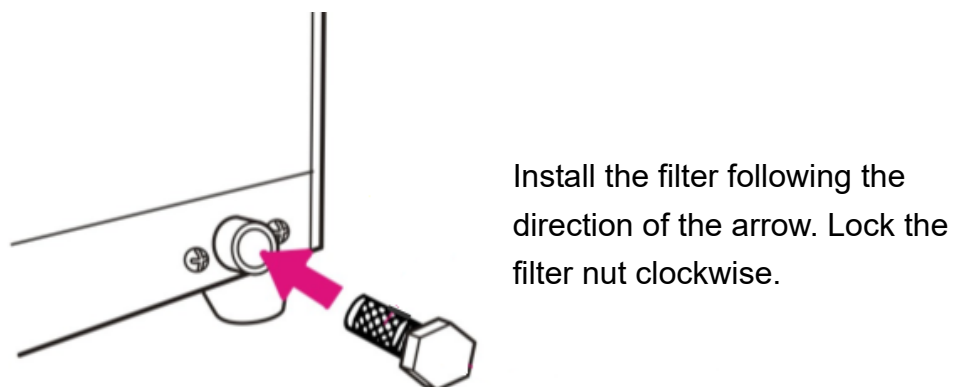


Figure 29

7.3 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 30.

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.

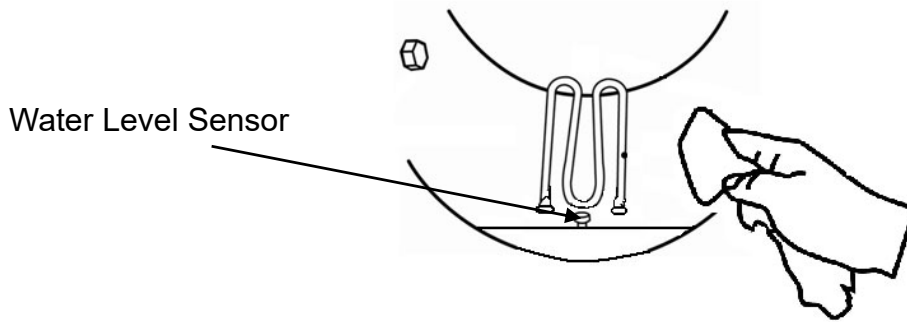


Figure 30

- Clean the chamber and piping system with “CHAM-MATE” following the instructions of “CHAM-MATE”.
- Check the air filter (see “Figure 31”) and replace with a new one if the color shown dark gray.

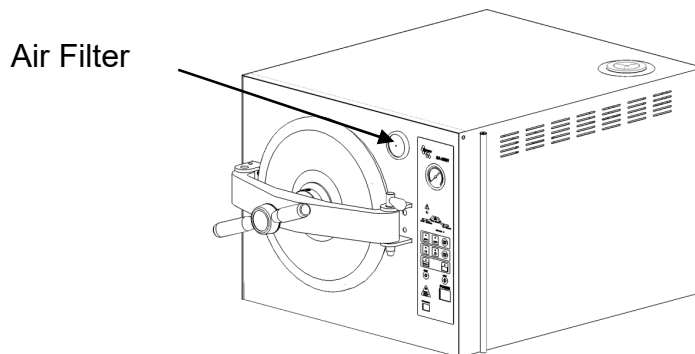


Figure 31

- Check the safety valve

Turn off the power and unplug the sterilizer. Remove the water reservoir cap as Figure 32. 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.

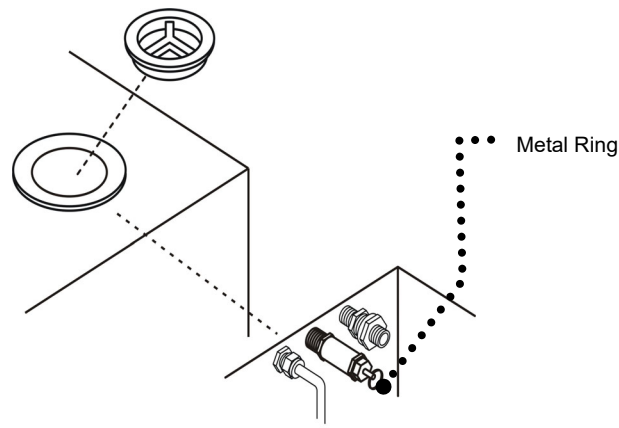


Figure 32

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.

- 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.
- How to replace the silicone door gasket:

Install the gasket to the door groove following the order of Figure 33.

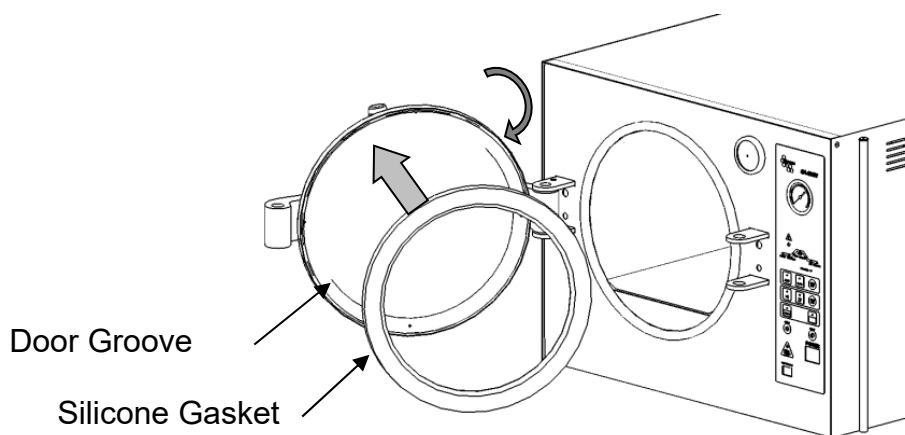


Figure 33



Note: The old gasket should be disposed in accordance with the national laws.

8. Troubleshooting

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 Install the sterilizer" to refill distilled water.
	Dirty water level sensor	Follow "7.3 Monthly" maintenance to clean the sensor.
	Filter blocked	Follow "7.2 Weekly" maintenance to clean the filter.
	Dirty 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 "7.4 Annually" maintenance to replace it.
Door cannot be opened	Pressure persists inside chamber	Follow "6.3 Emergency Stop" to press "Vacuum/Pressure 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.

9. Specifications

Model	SA-300H
Chamber Capacity (L)	40
External Dimensions (mm)	740 (D) × 600 (W) × 470 (H)
Chamber Size (mm)	300 Diameter × 570 Depth
Maximum Instrument Length (mm)	520
Maximum Load (un-pouched) (g)	10,000
Gross Weight (kg)	75
Voltage/Wattage	230V AC, 50/60Hz 2835W
Fuses	15A × 2, No Fuse (circuit) Breaker
Water Reservoir Capacity (ml)	8,400
Water Capacity per Cycle (ml)	450(MAX)
Sterilization Temperature (°C)	121°C / 134°C
Working Environment	<ul style="list-style-type: none"> ● Indoor use only; ● Altitude less than 1,000 m; ● Ambient temperature between 5°C and 40°C; ● Humidity : 80% RH@31°C non-condensing to 50% RH@40°C; ● Voltage fluctuations up to ±10 %; ● Transient overvoltage 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
Pressure Display	Analog Pressure gauge
Function Display	LED
Program Selections	Wrapped/unwrapped, Dry/no dry, Re-Dry
Drying Function	40 mins (Re-Dry: 10 mins)
Additional controls	Start, Reset, Vacuum/Pressure release

The specifications are subject to be changed without notice.

10. Warranty

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 or 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 9001 & 13485 Certificated Firm)

Name	Sturdy Autoclave Sterilizer
Model	SA-300H
Manufacturer 	Sturdy Industrial Co. Ltd.
Address	168, Sec. 1, Zhongxing Rd., Wugu District, New Taipei City, 24872, Taiwan
EC Representative 	APEX MEDICAL S.L. Elcano 9, 6 ^a planta 48008 Bilbao. Vizcaya SPAIN