



SA-300VFA Instruction Manual

Please read manual carefully before using and keep it well.

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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 falling 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 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.

Caution: This indicates a potentially hazardous situation arising from 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.

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.

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

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

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

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 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: In an emergency, or before carrying out any maintenance, always disconnect the power 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: Please unplug the power cord and drain off water from the reservoir if the sterilizer will not be used regularly.

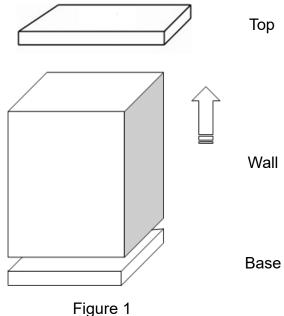
Warning: Always check the status of the electric wire; unplug the power cord if breakage comes up. Contact your supplier for service support.

2. Explanation of Safety Symbols and Notes

\triangle	Caution, consult instruction manual for use
	Protective earth (ground)
\sim	Alternating Current
	Attention! Hot surface
X	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)
EC REP	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.
Ωi	Consult instruction manual for use
	On, connection to the mains
\bigcirc	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 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.



- Cut the banding Α
- В Lift off the top cover of the carton
- Remove the wall and the foam packaging inserts С
- D Carefully move the sterilizer from the packaging base
- Ε Check all accessories are present as follows (accessories are packed inside the sterilizer chamber):
 - Instruction Manual × 1
 - Heater Cover × 1
 - Sterilization basket x 2
 - Cover of basket × 1
 - 2000cc bottle x 1
 - Exhaust hose X 2

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".

 Δ 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. 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. And keep this autoclave in level condition then press the caster. To fix the machine.

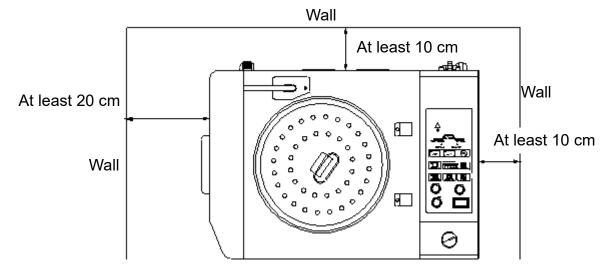


Figure 2

B. Pipeline installation:

- B-1: Install the water inlet that one end to be fixed at the pipe connector "F" port. And another end must be fixed on the connector of the water source system.
 - B-2: Install the exhaust hose: that one end to be fixed on the pipe connector "G" port. And another end must be fixed on the connector of the water exhaust piping system.

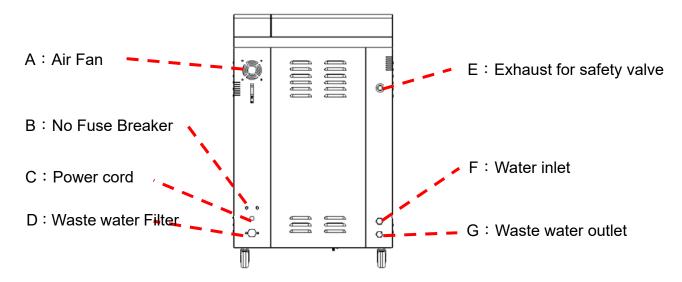


Figure 3

Warning: Waste water must be brought into the public water piping in accordance with the local rules or requirements, i.e. only non-hazardous liquids may be disposed in public sewage!

C. Install the heater cover as Figure 4.

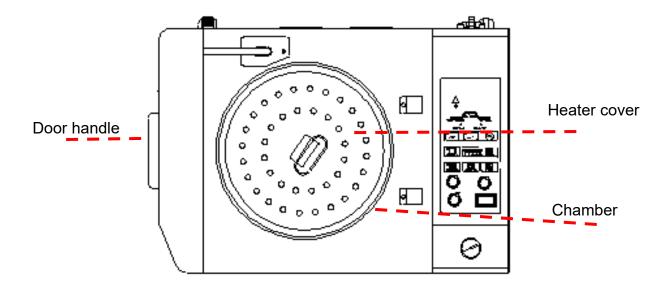


Figure 4

Caution: Gap under heater cover it must point to left side when you put heater cover into chamber.

D. Install the sterilization basket as Figure 5.

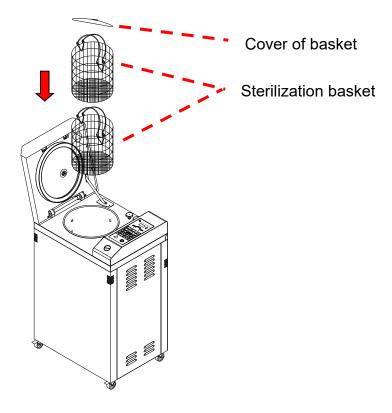


Figure 5

- E. Close the door and press Door handle.
- F. 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 15 A / 230V AC.

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

G. 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.

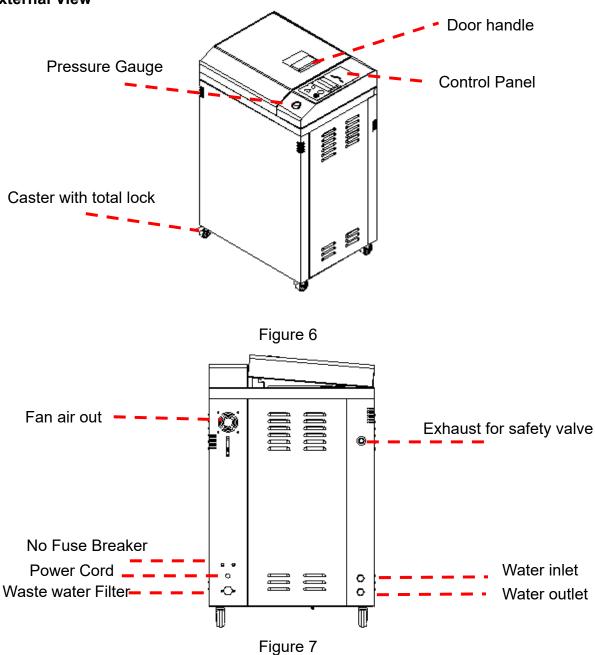
5. Introduction

5.1 Intended Use

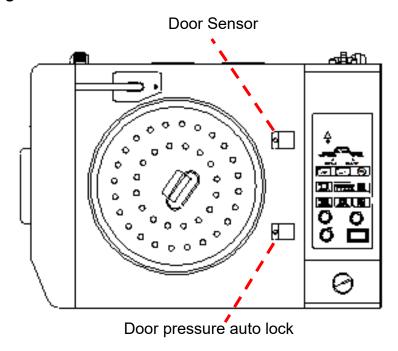
This product is a vertical high pressure steam sterilizer which is designed and developed for the sterilization of wrapped and unwrapped items. It can also perform sterilization of liquid which is not for medical purpose.

5.2 Description of the Sterilizer

5.2.1 External View



5.2.2 Internal Configuration



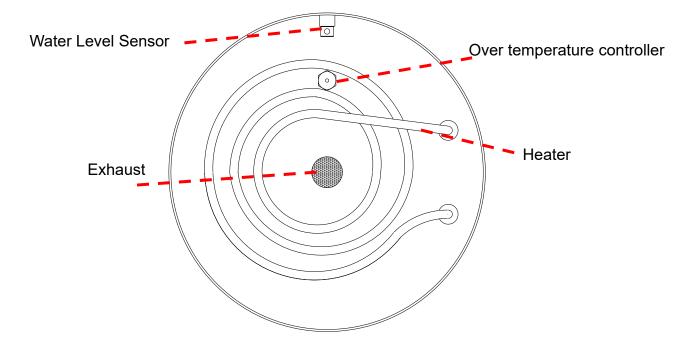
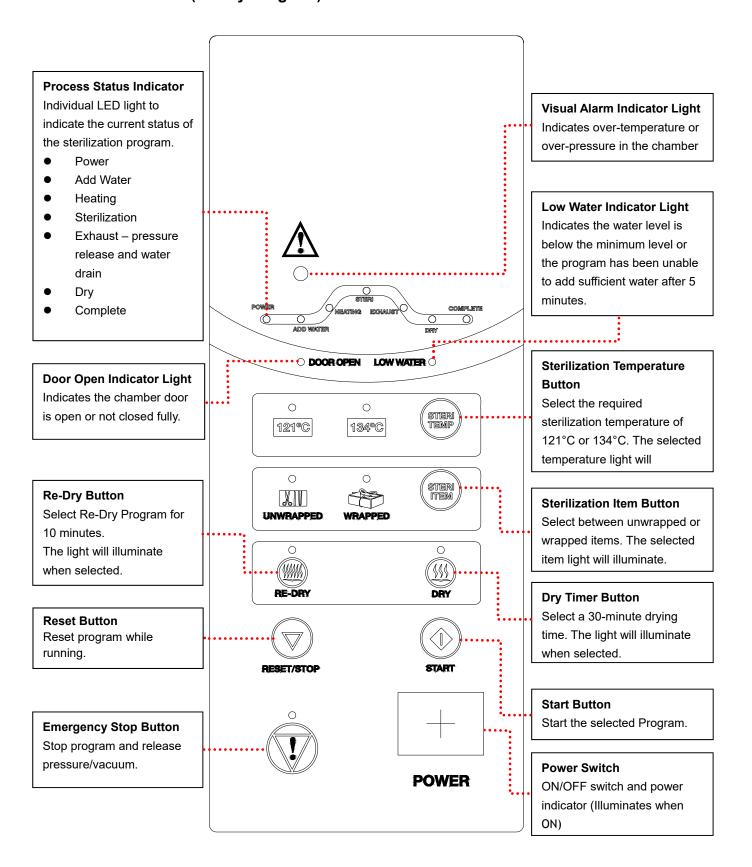
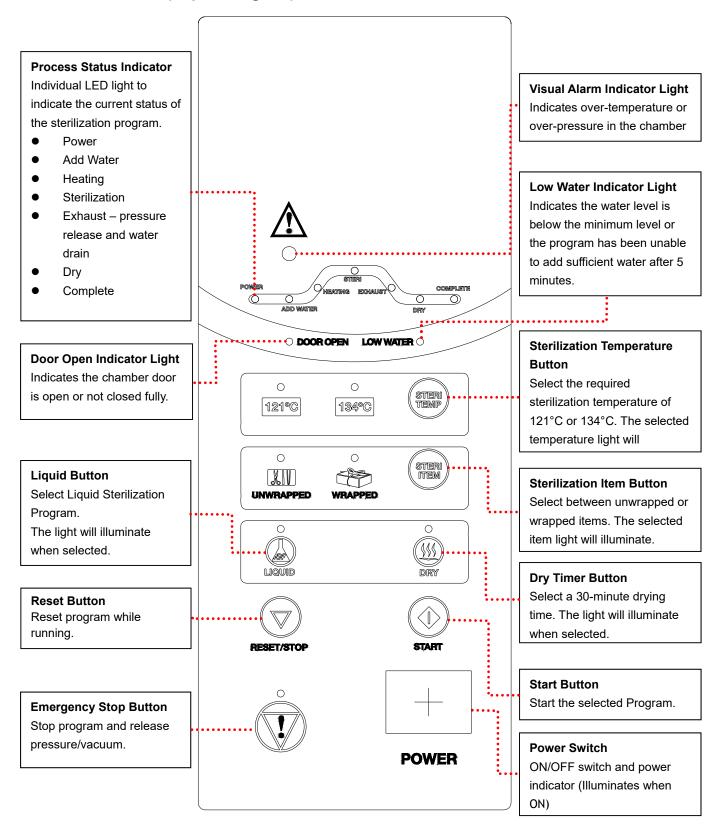


Figure 8

5.2.3 Control Panel (Re-dry Program)



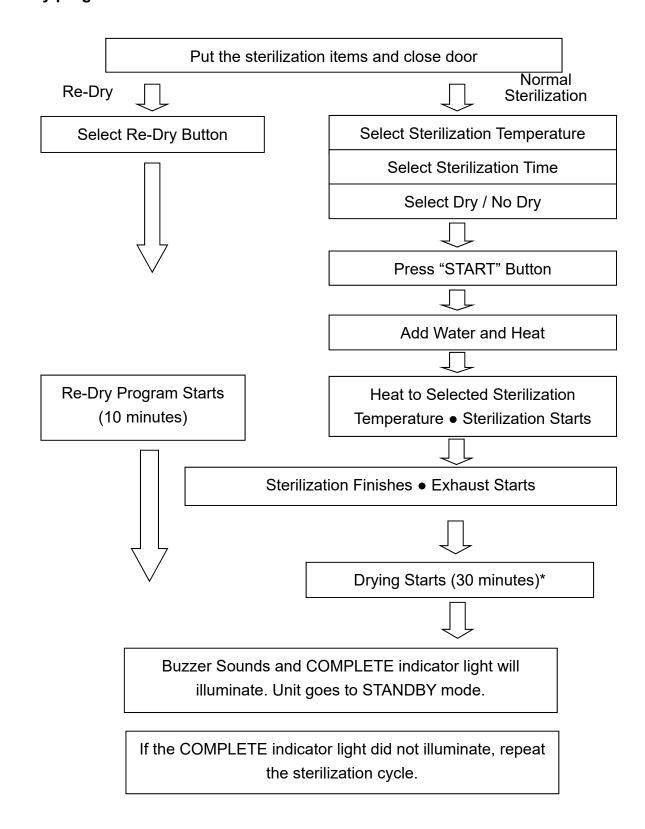
5.2.4 Control Panel (Liquid Program)



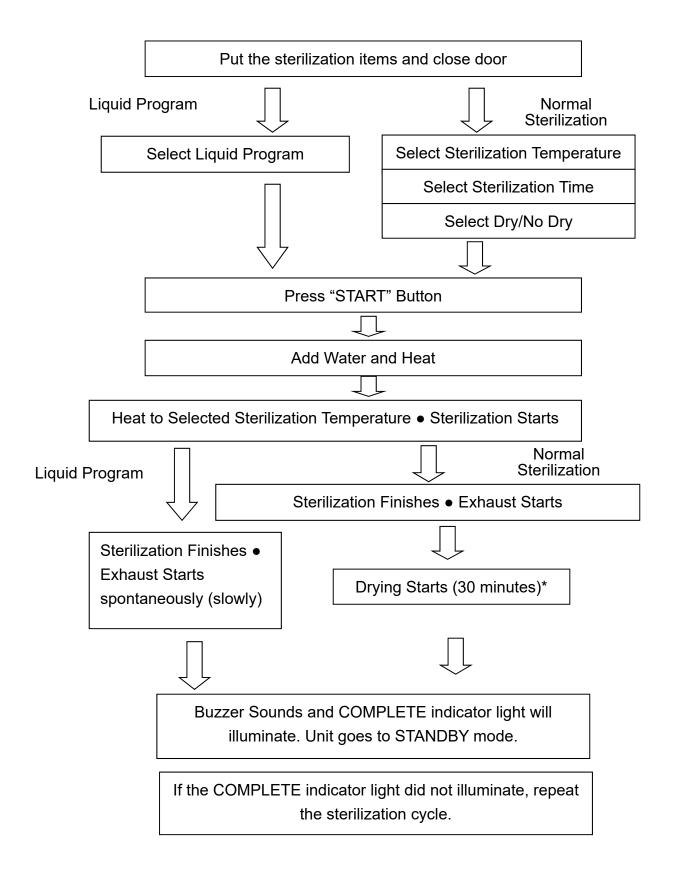
6. Operation

6.1 Operation Overview

6.1.1 Re-dry program



6.1.2 Liquid program



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 basket as required as Figure 9.



Put the sterilization items into baskets. But the sterilization items don't over the basket.

Figure 9

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 and press Door handle.
- F. Press the "POWER" switch to ON "I" position, the power indicator light should illuminate. The "DOOR OPEN" indicator light should be off.

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.

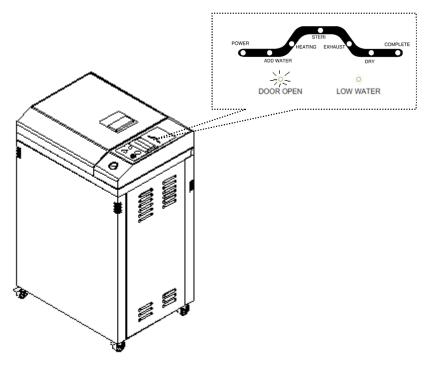
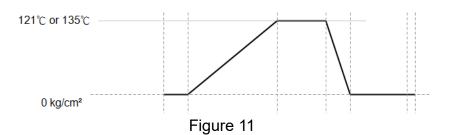


Figure 10

6.3 Standard Sterilization Program

- A. Before start Sterilization program please refer to "6.2 Prepare Sterilization" section.
- B. How to set the Standard Sterilization program



C. Press "STERI TEMP"

to select 121°C or 134°C

D. 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 min.	4 min.
Wrapped	30 min.	15 min.

- E. Press Dry Timer Button to select a maximum 30 min. drying time. (*If drying is required.)
- F. 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 12).

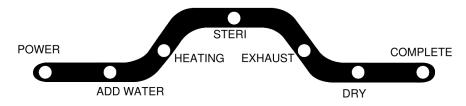


Figure 12

- ADD WATER: Add water 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.

- 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 run again.

G. 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 "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 min. interval between each sterilization cycle to allow the unit to cool.

6.4 Liquid Program

- Before start Sterilization program please refer to "6.2 Prepare Sterilization" section.
- How to set the Liquid program B.

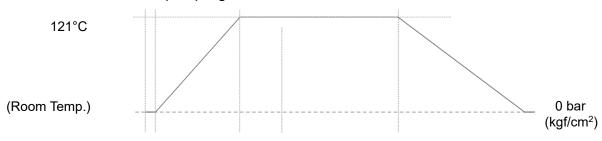


Figure 13

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



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

Sterilization Time	40 min.
Sterilization Temperature	121°C
Dry Time	N/A (no exhaust)

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 14)

Note: The DRY step won't be performed.



Figure 14

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 run again.

E. 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 min. interval between each sterilization cycle to allow the unit to cool.

Caution: After the Liquid program, please take out the sterilized items, and then run again the "Normal" program to let the water inside chamber return to the water reservoir.

6.5 Re-Dry Program

Press Re-Dry **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.

6.6 Reset / Stop

Press the RESET/STOP Button 3 seconds to suspend the current step of a sterilization program.

Note: You may press the Emergency Button to release the chamber pressure.

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

6.7 Emergency Stop

Press the Emergency Button 3 seconds to stop the program and release the pressure/vacuum. The sterilizer will sound to alert, and the Error message E07 will be displayed to notify an emergency operation. Please wait till the pressure gauge is reading ZERO, or press

the Reset/Stop Button reset to stop the error message and also to reset the program.

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

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.

Note: If the Emergency Button had been pressed without opening the door, you may require repeating this emergency to release the pressure.

6.8 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.

6.8.1 Sterilization for Implements

Place implements on the tray evenly according to Figure 15, Figure 16. Do not pile up nor overlap each implement.

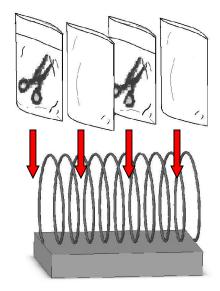


Figure 15

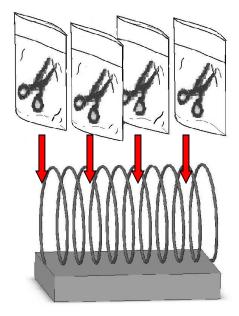


Figure 16

6.8.2 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.

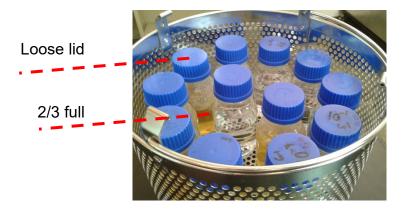


Figure 17

7. 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.

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 (
- Figure 6) are not blocked.
- Check the status of the power cord. Call for service if breakage comes up.

7.2 Weekly

- Clean the box, tray frame and trays with detergent, or a non-corrosive stainless steel cleaner and water, using cloth or sponge.
- Clean the filter use a wrench (or Knife Screwdriver) to unscrew the filter nut counterclockwise as shown in Figure 18 to Figure 20.

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

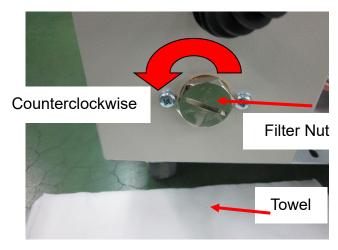


Figure 18

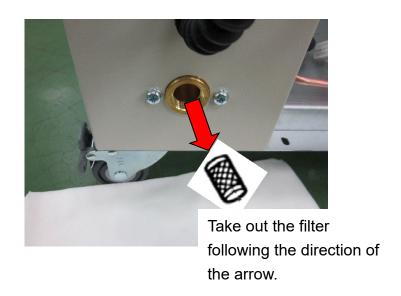


Figure 19

Take out the filter carefully, and flush it with water to clean it. Assemble it back as shown in Figure 20.

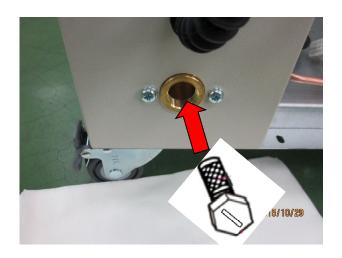


Figure 20

Install the filter following the direction of the arrow. Lock the filter nut clockwise.

7.3 Monthly

- Use the non-corrosive cleaner and stiff bristled brush or sponge to clean the water level sensor at the bottom of the chamber as Figure 21.
- Clean the dirt off at filter of the bottom of the chamber as Figure 21.

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.

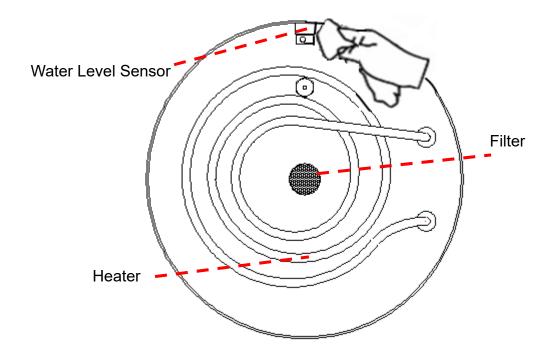


Figure 21

- Clean the chamber and piping system with "CHAM-MATE" following the instructions on the sachet.

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.

7.4.1 Silicone door gasket

How to replace the 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 22 •

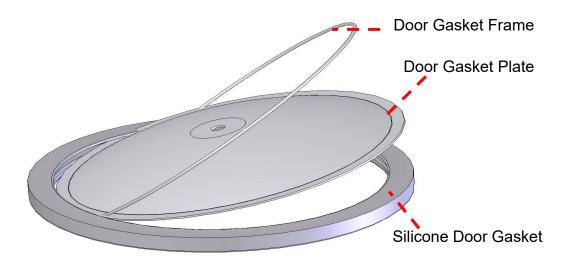


Figure 22

2. Check if the door gasket frame, door gasket plate are installed into the gasket completely as shown in Figure 23.



Figure 23

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 24. Take thick end of silicone door gasket of the installation direction while pressing the gasket into the groove. Refer to Figure 25 for the correct direction.

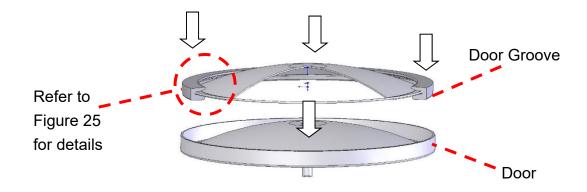


Figure 24

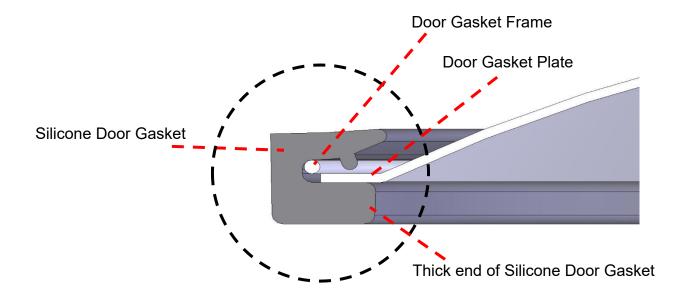


Figure 25

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

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

8. Troubleshooting

8.1 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	Insufficient water inside the water reservoir	Follow "4.2 " to refill distilled water.	
indicator light	Water level sensor inside chamber	Follow "7.3 Monthly" maintenance to clean the sensor.	
ON and buzzer	Filter blocked Follow "7.2 Weekly" maintenance filter.		
sounds	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.	
Water inside	Piping system of filter blocked.	Contact local distributor for service.	
chamber doesn't automatically return to the reservoir	Faulty exhaust solenoid valve.	Contact local distributor for service.	
	Liquid program performed. (*Optional program)	Run "STANDARD" program to let the water inside chamber return to the water reservoir.	
Excessive force is	1. Do not use the tool.	Please use the tool (e.g. screw driver or pliers) to pull the ring.	
required to pull the safety valve	2. Faulty safety valve	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-300VFA
Chamber Capacity (L)	50
Maximum Instrument Length (mm)	600
Maximum Load (unpouched) (g)	10,000
Maximum Load (pouched) (g)	1,000
External Dimensions (mm)	450mm(D) x 600mm(W) x 980mm(H)
Chamber Size (mm)	Ø300 x 710 mm (D)
Gross Weight (kg)	104 kg
Power	220 - 240 V ac, 50/60 Hz, 12.7A,
Wattage	2300W for main heater 600W for band heater
Fuses	15A × 2, No Fuse (circuit) Breaker
Water Reservoir Capacity (ml)	NA
Water Capacity per Cycle (ml)	1000 ~1200
Sterilization Temperature (°C)	121 / 134
Working Environment	 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/cm² (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 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/134°C
Drying Function	30 min. (Re-Dry: 10 min.)
Additional controls	Start, Reset, Vacuum/Pressure release
Standard Accessories	Basket *2; Heater cover; 2000cc bottle*1 pcs

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 of replacement and under no circumstances shall "STURDY" be liable for any collateral consequential damages or loss. This guarantee specifically excludes the expendables and consumable.

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

User's Name: Address:			
Country:	Tel:		Fax:
Date of Purchase:		Model No.:_	
Series No.:			
Distributor:			

Manufacturer: Sturdy Industrial Co.,Ltd. (ISO 9001 & 13485 Certificated Firm)

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