STURDY
APEX GROUP

# “Sturdy” Autoclave Sterilizer

# SA-300VMA / SA-300VMA-R
# Instruction Manual

Please read manual carefully before using and keep it well.

CE 2460

422-03010 v.14 30 September 2020

# Contents

# 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 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.

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

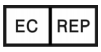
**Warning:** In an emergency, or before carrying out any maintenance, always disconnect the power cord from the outlet.

**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

| | |
|---|---|
|  | Caution, consult instruction manual for use |
|  | Protective earth (ground) |
|  | Alternating Current |
|  | Attention! Hot surface |
|  | Disposal of Electrical & Electronic Equipment (WEEE):<br>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<br>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 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.

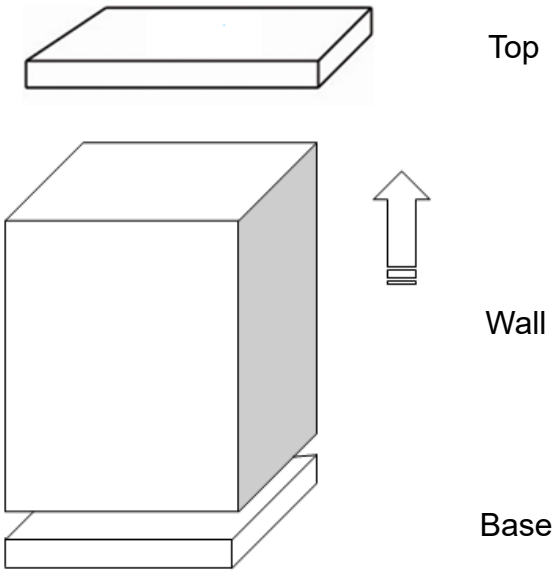



Figure 1

A Cut the banding

B Lift off the top cover of the carton

C Remove the wall and the foam packaging inserts

D Carefully move 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 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”.

⚠**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.

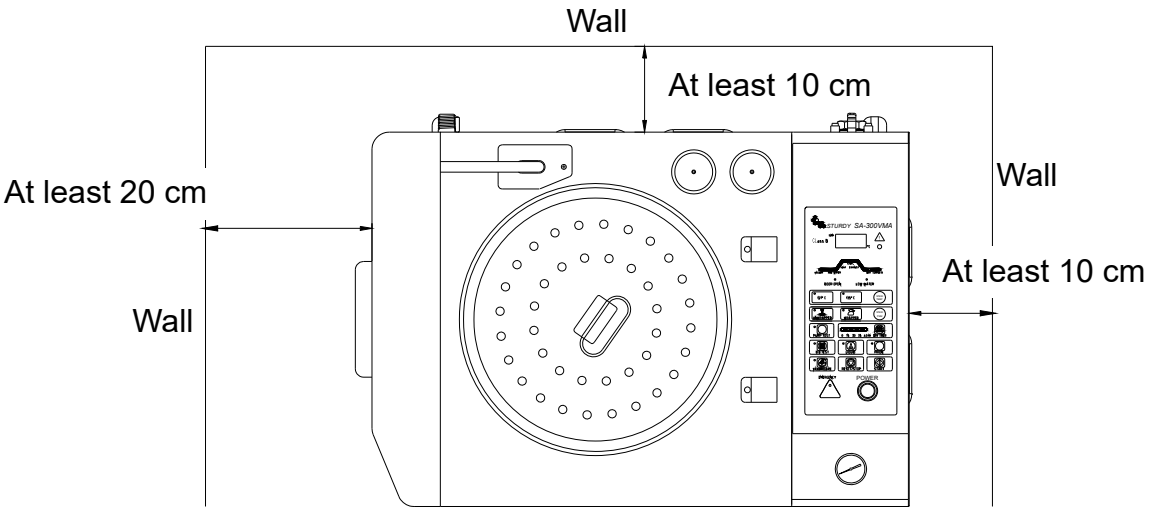



Figure 2

B. Pipeline installation:

B-1: Install the water inlet that one end to be fixed at the pipe connector “E” 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 “F” port. And another end must be fixed on the connector of the water exhaust piping system.

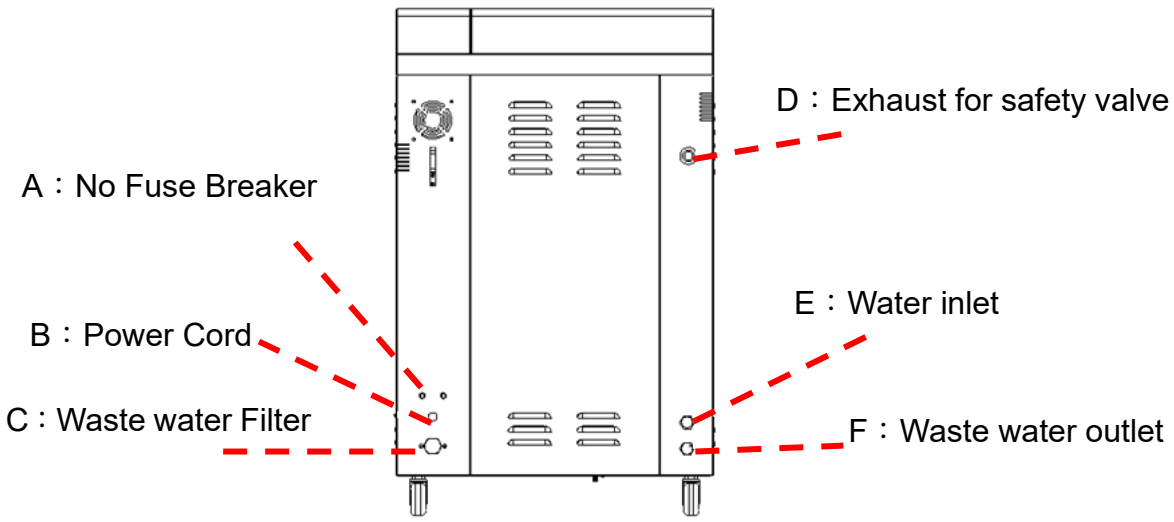



Figure 3

⚠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.

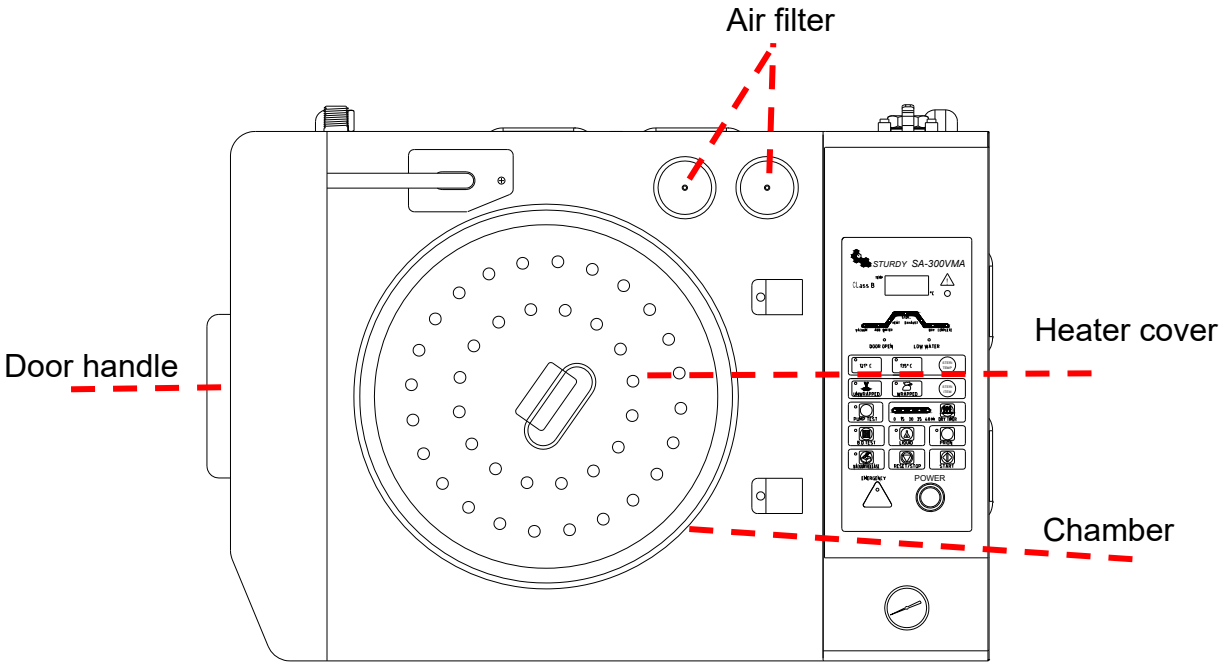



Figure 4

D. Install the sterilization basket as Figure 5.

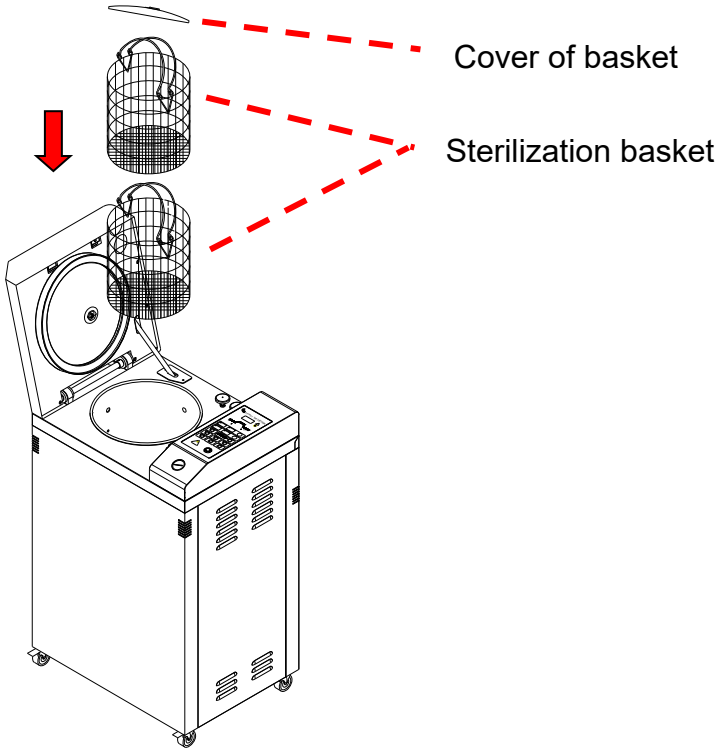



Figure 5

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 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.

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

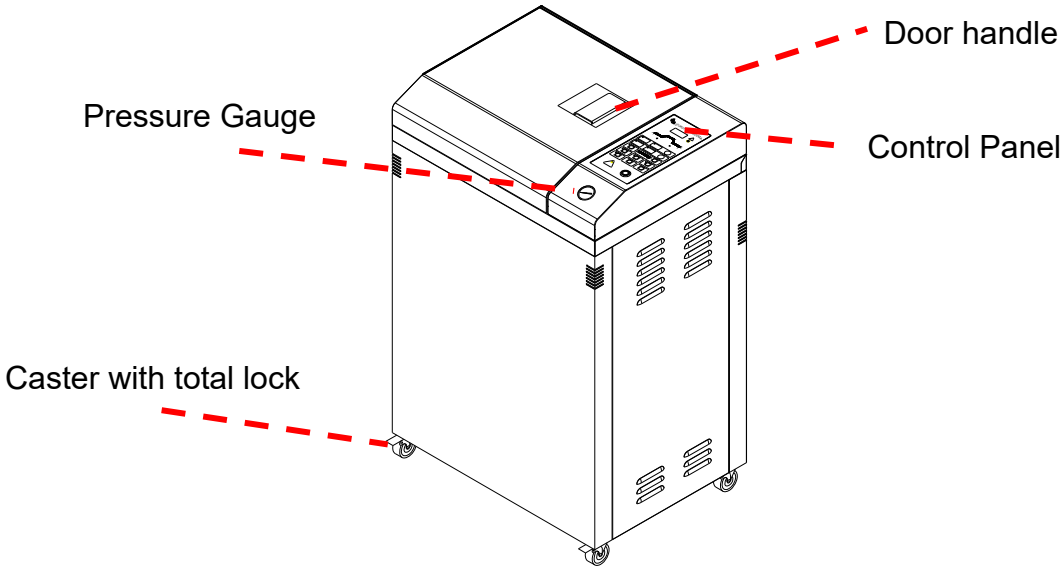



Figure 6

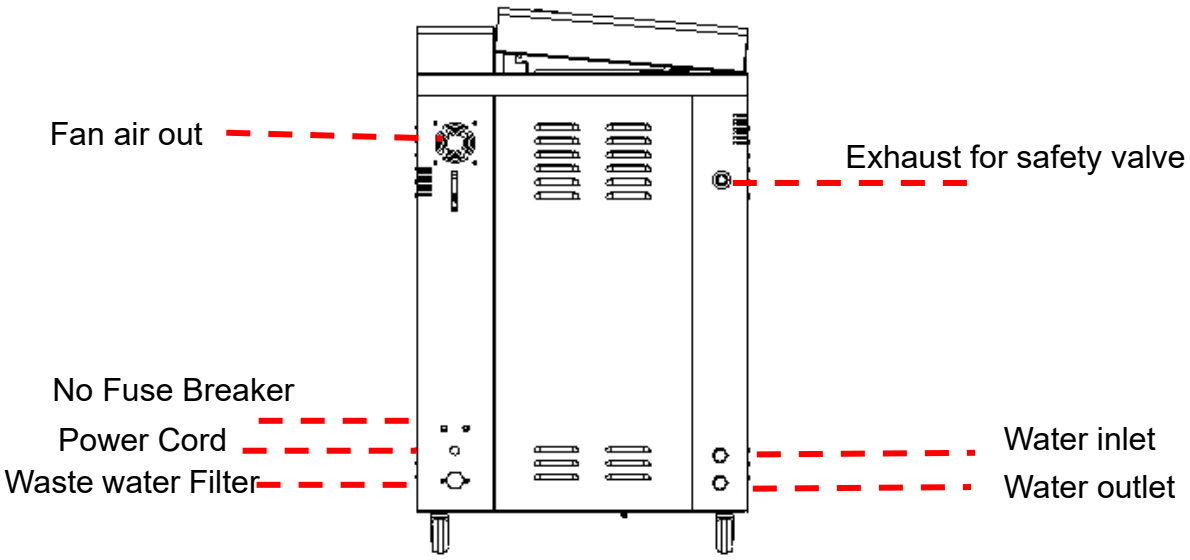



Figure 7

### 5.2.2 Internal Configuration

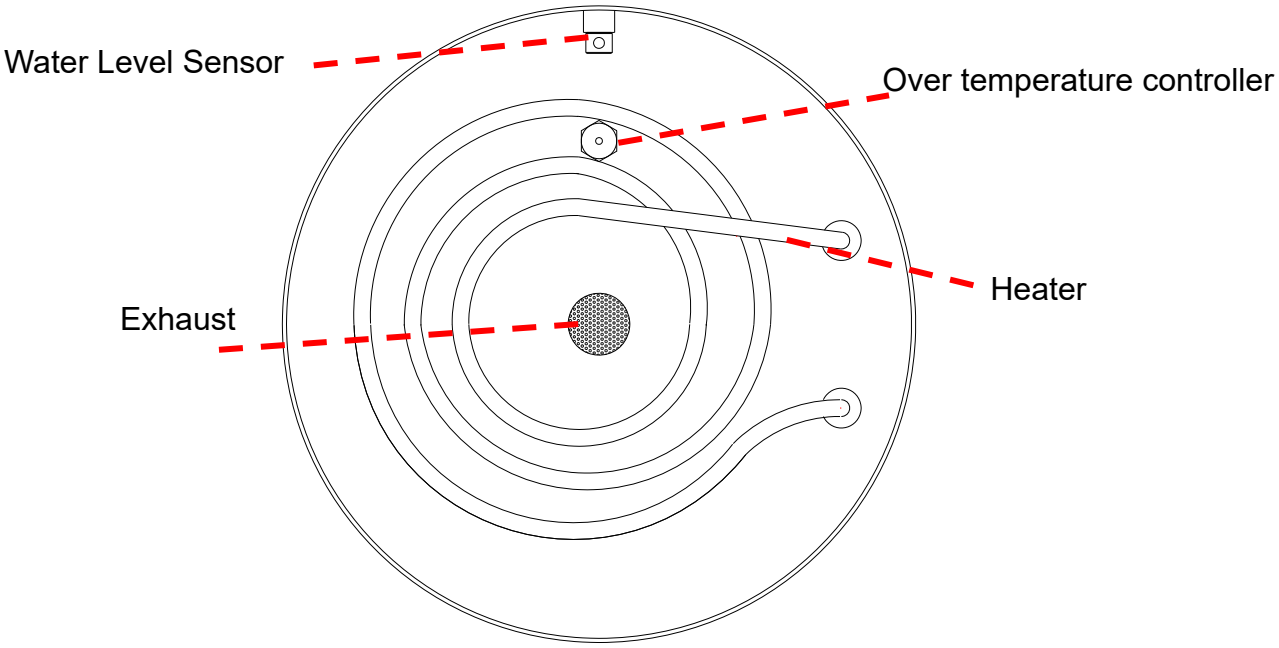



Figure 8

## 5.2.3 Control Panel (Liquid Program)

**Temperature Panel**
Display the temperature inside the chamber.
Display “REC” with recorder type (optional).

**Process Status Indicator**
Individual LED light to indicate the current status of the sterilization program.

- Vacuum
- Add Water
- Heating
- Sterilization
- Exhaust – pressure release and water drain
- Dry
- Complete

**Door Open Indicator Light**
Indicates the chamber door is open or not closed

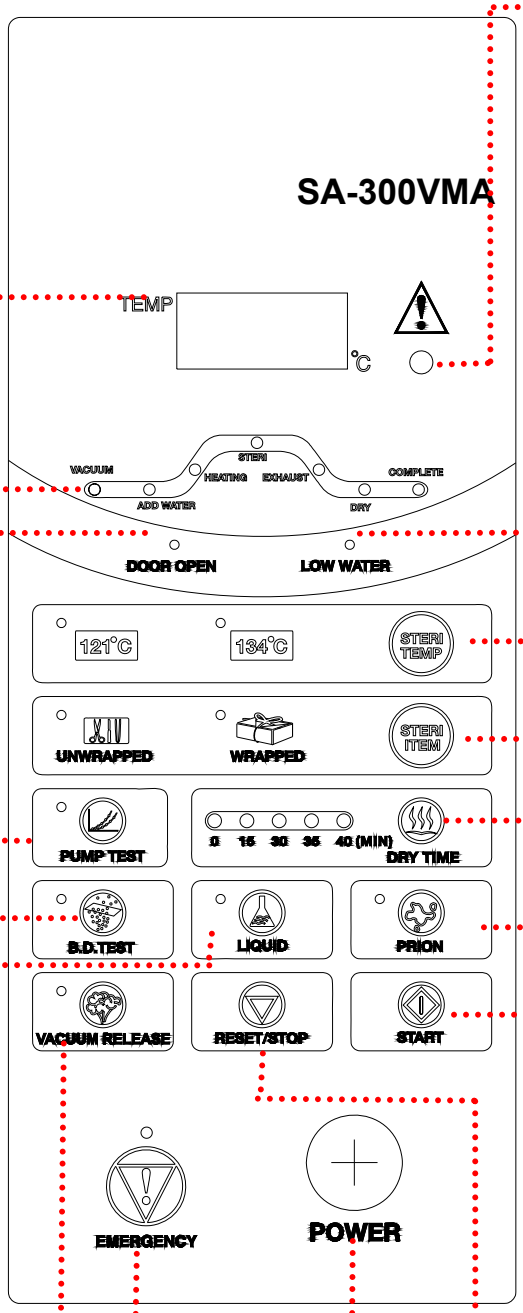
**Pump Test Button**
Perform pumping step for verifying the pump function.

**B.D. Test Button**
Perform B.D. Test program.

**Liquid Button**
Select Liquid Sterilization Program. The light will illuminate when selected.

**Vacuum Release Button**
To release the pressure inside the chamber prior opening the door.

**Emergency Stop Button**
Stop program and release pressure/vacuum. (Press for more than 3 seconds.)




**Visual Alarm Indicator Light**
Indicates over-temperature or over-pressure in the chamber.

**Low Water Indicator Light**
Indicates the water level is below the minimum level or the program has been unable to add sufficient water after 5 min.. And reservoir

**Sterilization Temperature Button**
Select the required sterilization temperature of 121°C or 134°C. The selected temperature light will illuminate.

**Sterilization Item Button**
Select between unwrapped or wrapped items. The selected item light will illuminate.

**Dry Timer Button**
Select a 0/15/30/35/ 40 min. drying time. The light will illuminate when selected.

**PRION Button**
Start the PRION Program.

**Start Button**
Start the selected Program.

**Reset / Stop Button**
Reset program while running. (Press for more than 3 seconds.)

**Power Switch**
ON/OFF switch and power indicator (Illuminates when ON)

## 5.2.4 Control Panel (Re-Dry Program)

**Temperature Panel**
Display the temperature inside the chamber.
Display “REC” with recorder type (optional).

**Process Status Indicator**
Individual LED light to indicate the current status of the sterilization program.

- Vacuum
- Add Water
- Heating
- Sterilization
- Exhaust – pressure release and water drain
- Dry
- Complete

**Door Open Indicator Light**
Indicates the chamber door is open or not closed

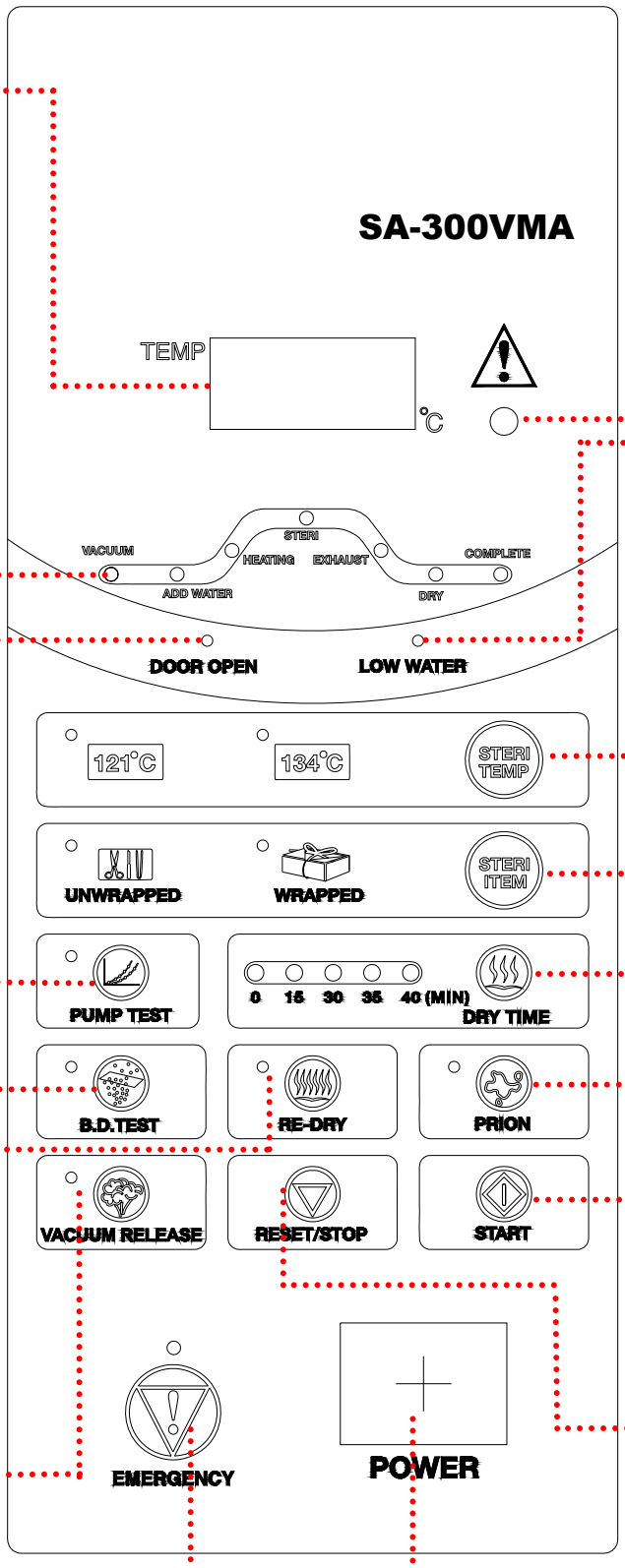
**Pump Test Button**
Perform pumping step for verifying the pump function.

**B.D. Test Button**
Perform B.D. Test program.

**Re-Dry Button**
Select Re-Dry Program for 10 min. The light will illuminate when selected.

**Vacuum Release Button**
To release the pressure inside the chamber prior opening the door.

**Emergency Stop Button**
Stop program and release pressure/vacuum. (Press for more than 3 seconds.)




**Visual Alarm Indicator Light**
Indicates over-temperature or over-pressure in the chamber.

**Low Water Indicator Light**
Indicates the water level is below the minimum level or the program has been unable to add sufficient water after 5 min.. And reservoir.

**Sterilization Temperature Button**
Select the required sterilization temperature of 121°C or 134°C. The selected temperature light will illuminate.

**Sterilization Item Button**
Select between unwrapped or wrapped items. The selected item light will illuminate.

**Dry Timer Button**
Select a 0/15/30/35/ 40 min. drying time. The light will illuminate when selected.

**PRION Button**
Start the PRION Program.

**Start Button**
Start the selected Program.

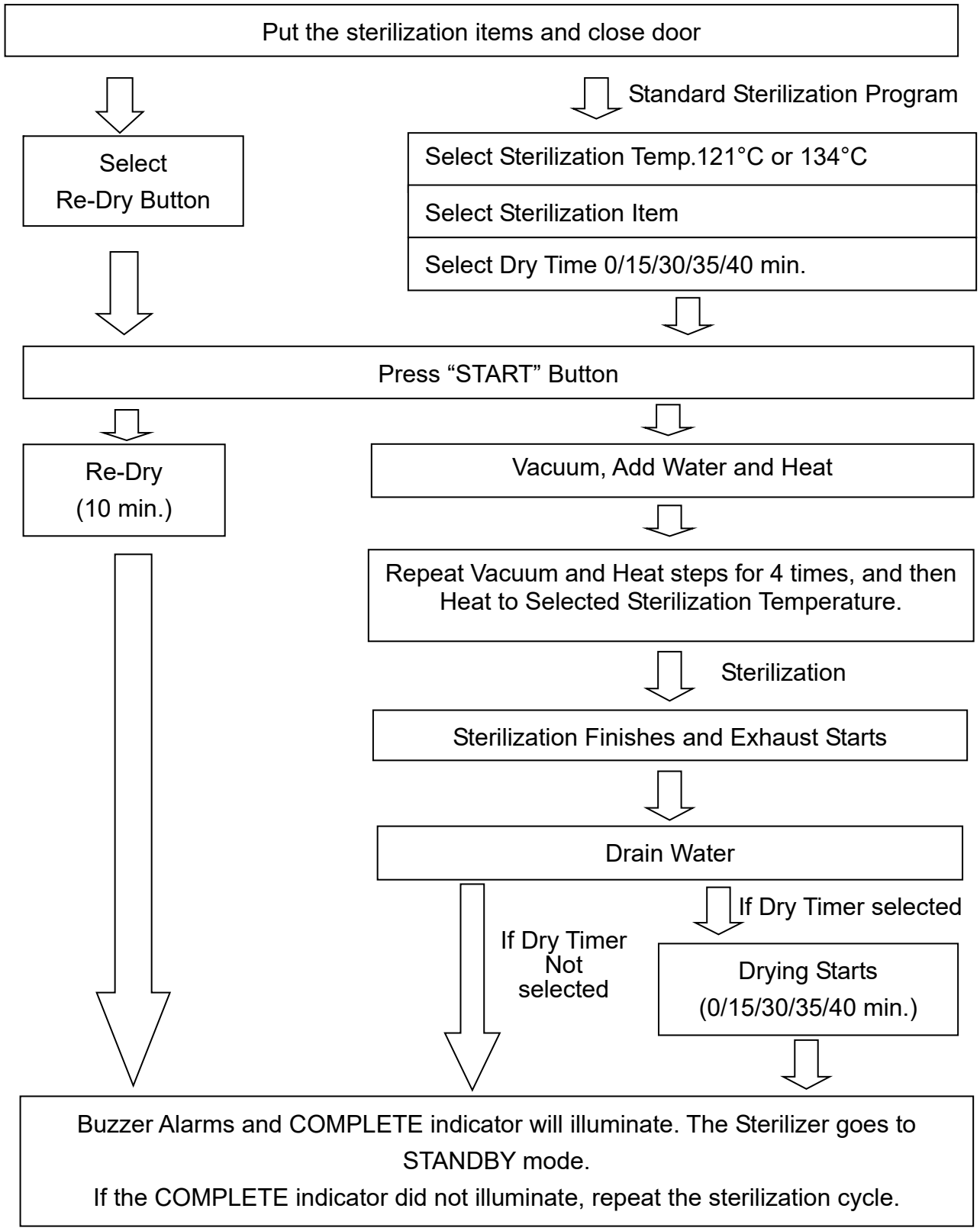
**Reset / Stop Button**
Reset program while running. (Press for more than 3 seconds.)

**Power Switch**
ON/OFF switch and power indicator (Illuminates when ON)

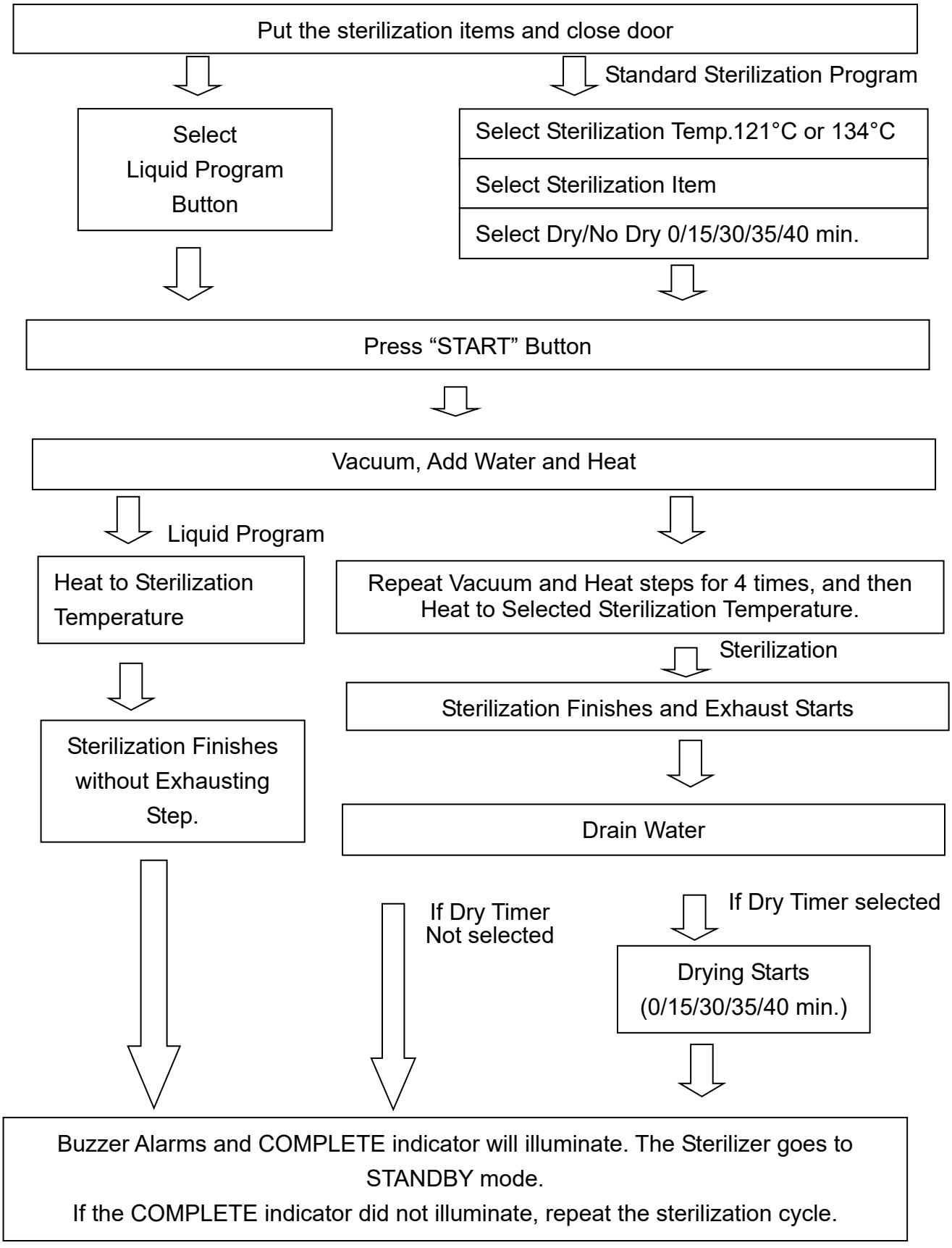
# 6. Operation

## 6.1 Operation Overview

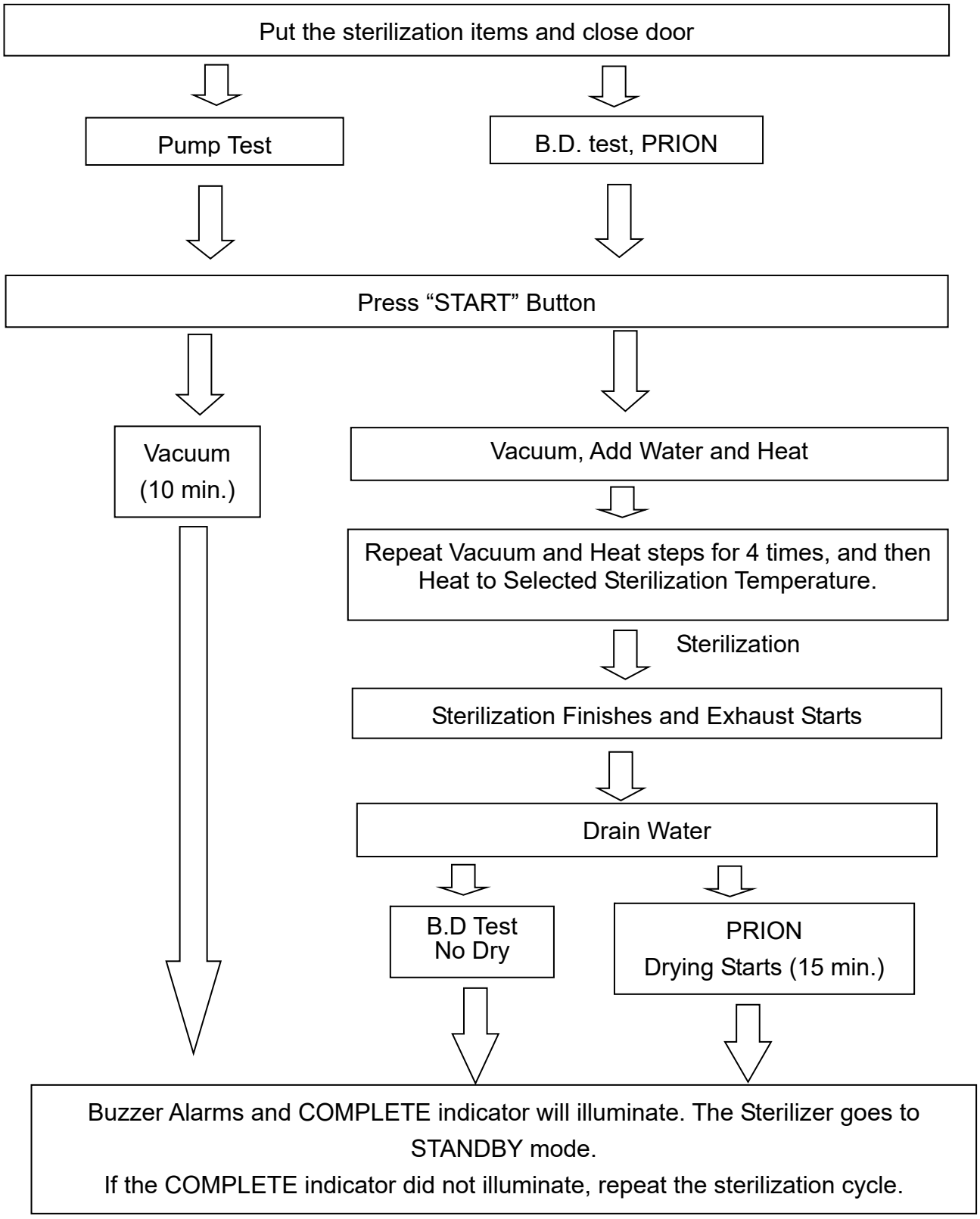
### 6.1.1 Re-Dry Program



### 6.1.2 Liquid Program



### 6.1.3 PUMP test / BD test / PRION



## 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.

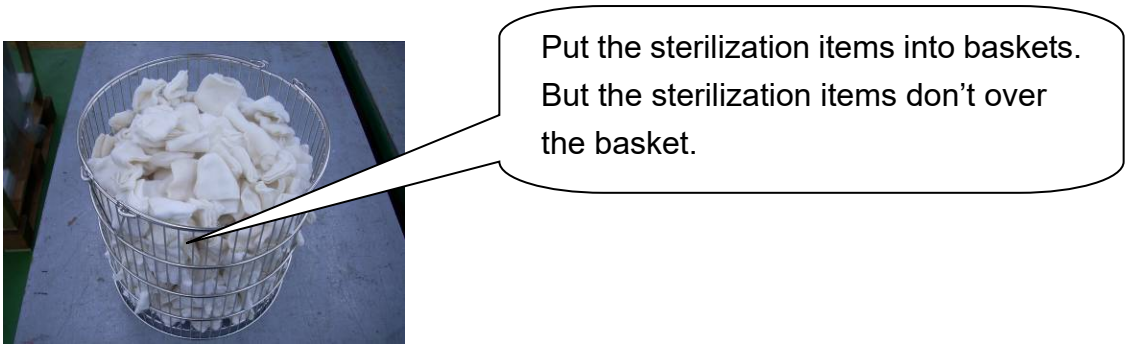



Figure 9

⚠**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.

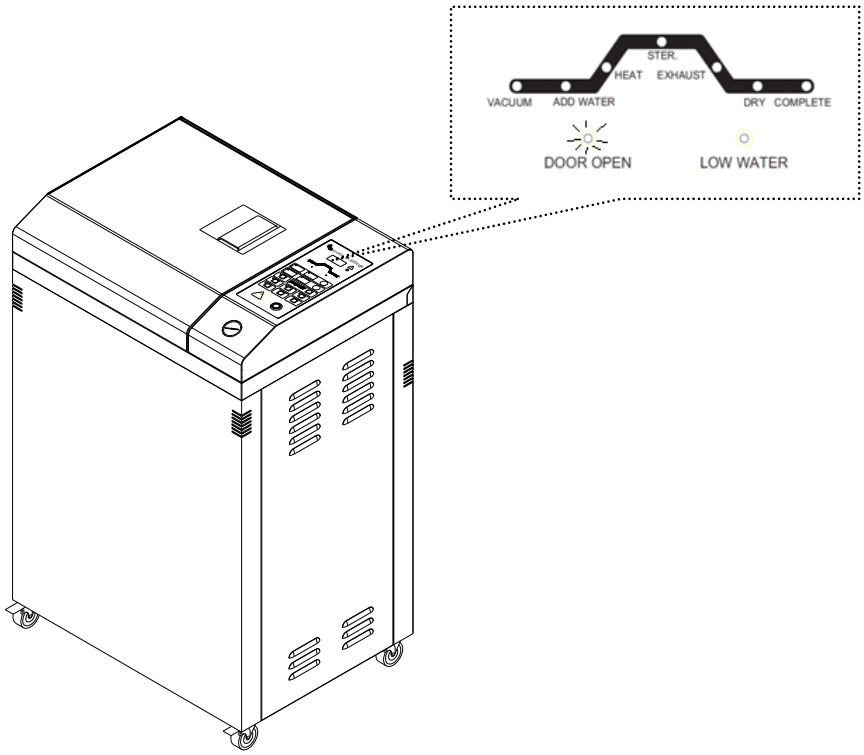



Figure 10

## 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

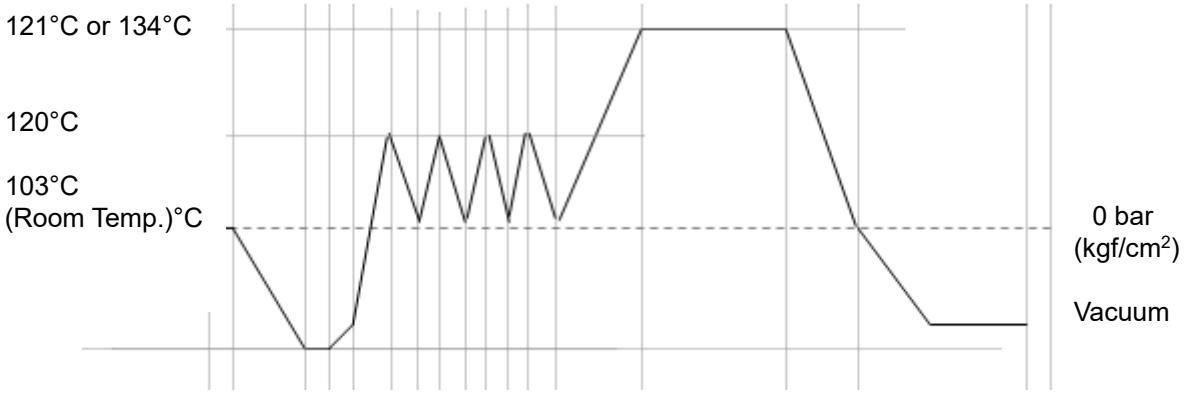



Figure 11

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 40 min. drying time. (*If drying is required.)

F. Press the START Button  , the setting temperature, duration, and dry time displayed two times on the three-digit display, and then 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).

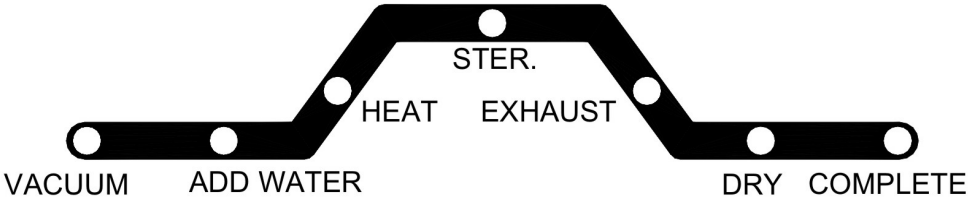



Figure 12

On completion, the buzzer will sound same time the display will flash. 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 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 “10. 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 Re-Dry Program (exclusive either to liquid functions)

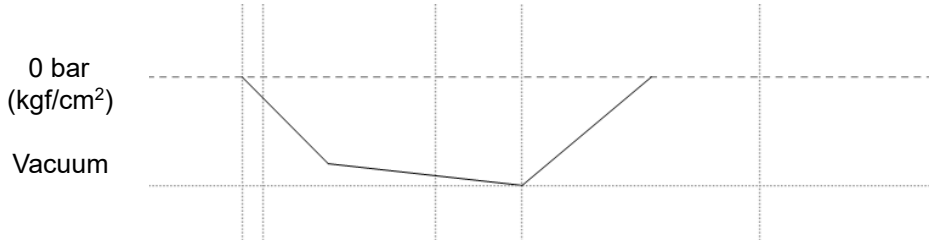



Figure 13

Press Re-Dry RE-DRY button and the indicator light will illuminate. Then press START button START to run a 10 min. 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 same time the display will flash. The program has finished when the buzzer STOPS and the COMPLETE indicator light is illuminated on the Process Status Indicator.

## 6.5 Liquid Program (optional, exclusive either to Re-Dry function)

A. Before start Sterilization program please refer to “6.2 Prepare Sterilization” section.

B. How to set the Liquid program

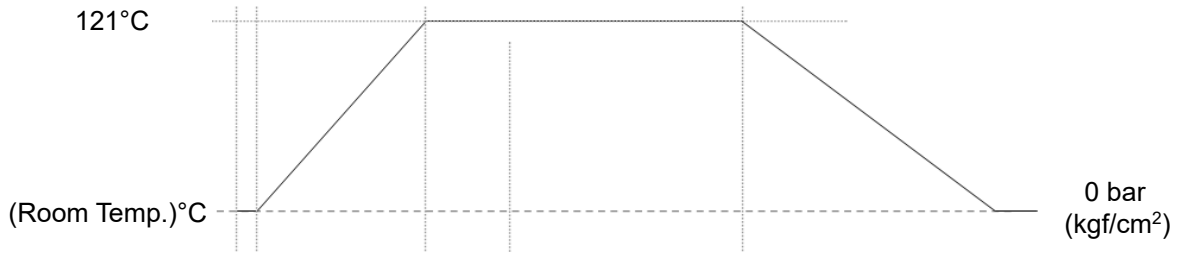



Figure 14

**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 LIQUID to start “Liquid Program”. The corresponding sterilization time will be:

| | |
|---|---|
| Sterilization Time | 40 min. |
| Sterilization Temperature | 121°C |
| Dry Time | N/A |

D. Press the START button START, the setting temperature, duration, and dry time displayed two times on the three-digit display, and then 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.

**Note:** The DRY step won’t be performed.

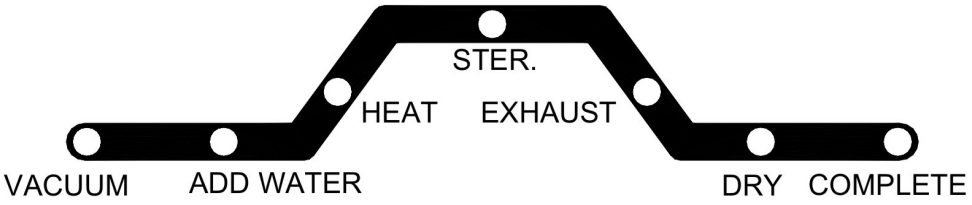



Figure 15

On completion, the buzzer will sound same time the display will flash. 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 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.

## 6.6 PRION Program

A. Before start Sterilization program please refer to “6.2 Prepare Sterilization” section.

B. How to set the PRION program

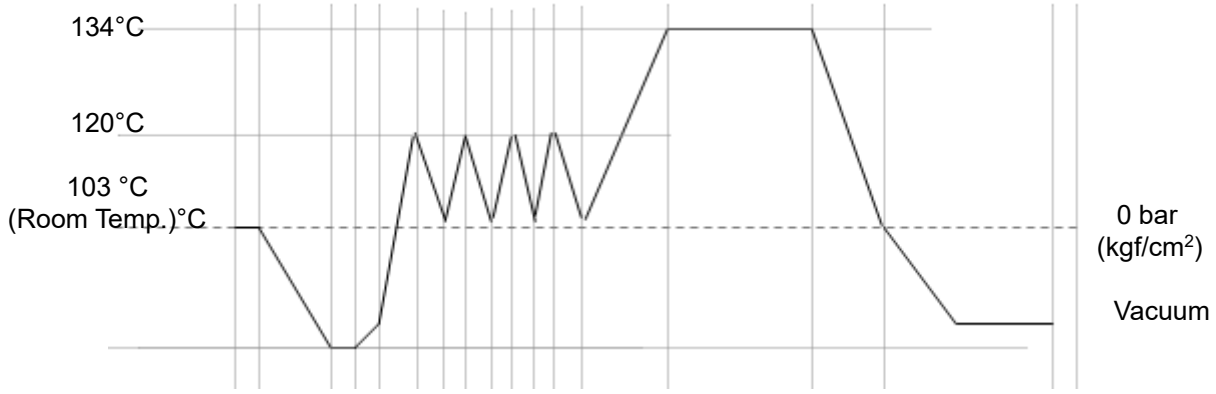



Figure 16

C. Press PRION to start “PRION Program”. The corresponding sterilization time will be:

| | |
|---|---|
| Sterilization Time | 18min. |
| Sterilization Temperature | 134°C |
| Dry Time | 15 min. |

D. Press the START Button START, the setting temperature, duration, and dry time displayed two times on the three-digit display, and then 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)

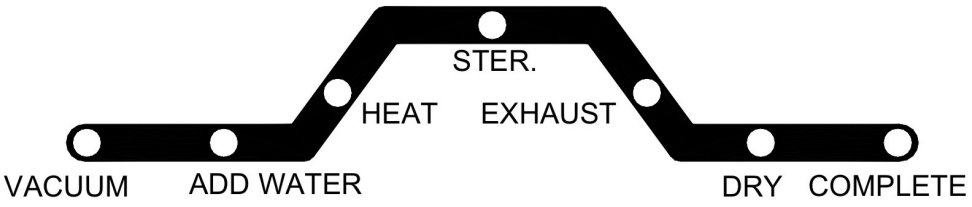



Figure 17

On completion, the buzzer will sound same time the display will flash. 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 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.

## 6.7 B.D. TEST Program

A. Before start Sterilization program please refer to "6.2 Prepare Sterilization" section.

B. How to set the B.D. TEST program

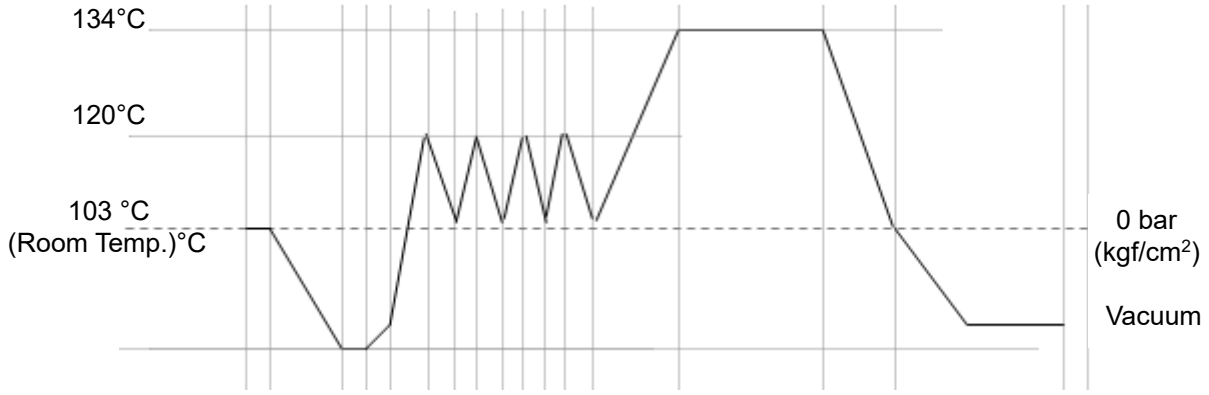



Figure 18

C. Press B.D.TEST to start "B.D. TEST Program". The corresponding sterilization time will be:

| | |
|---|---|
| Sterilization Time | 3 min. |
| Sterilization Temperature | 134°C |
| Dry Time | NA |

D. Press the START Button START, the setting temperature, duration, and dry time displayed two times on the three-digit display, and then 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 19)

Note: The DRY step won't be performed.

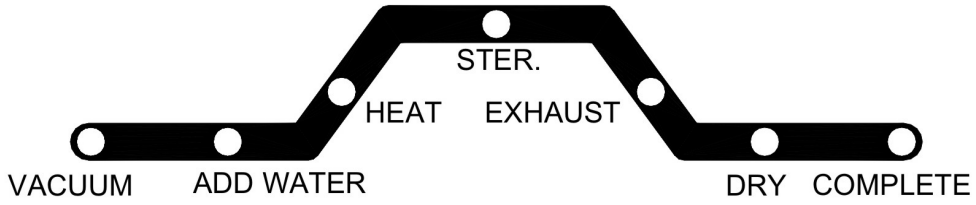



Figure 19

On completion, the buzzer will sound same time the display will flash. 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 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.

## 6.8 PUMP TEST Program

A. Before start Sterilization program please refer to “6.2 Prepare Sterilization” section.

B. How to set the PUMP TEST program

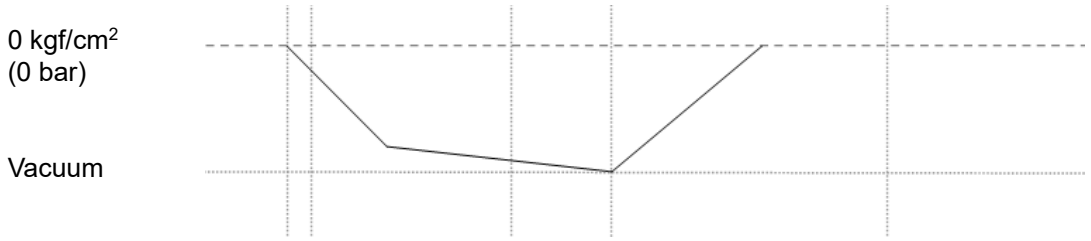



Figure 20

C. Press PUMP TEST to start “PUMP TEST Program”. The corresponding sterilization time will be:

| | |
|---|---|
| Sterilization Time | NA |
| Sterilization Temperature | NA |
| Dry Time | NA |
| Vacuum Time | 10 min. |

D. Press the START Button START 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 21)

Note: The DRY step won’t be performed.

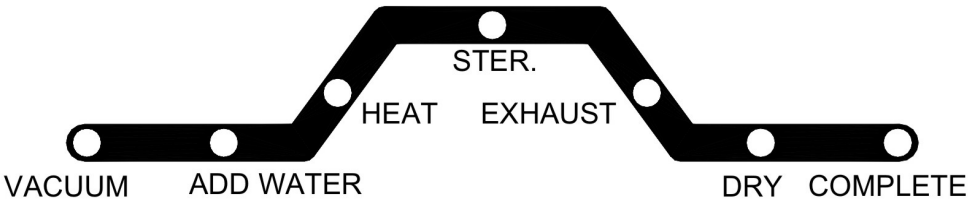



Figure 21

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 run again.

E. Press the Vacuum/Pressure Release Button VACUUM RELEASE to release the chamber pressure.

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

## 6.9 Vacuum Release

Press the Vacuum/Pressure Release Button 

to release the chamber pressure. The message “OP” will be displayed to notify operation. Please check the Pressure Gauge is reading ZERO before opening the door

## 6.10 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.

## 6.11 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 

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.

## 6.12 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.

### 6.12.1 Sterilization for Implements

Place implements on the tray evenly according to Figure 22, Figure 23. Do not pile up nor overlap each implement.

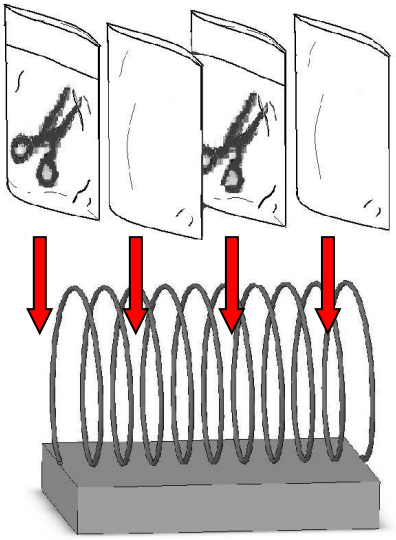


Figure 22

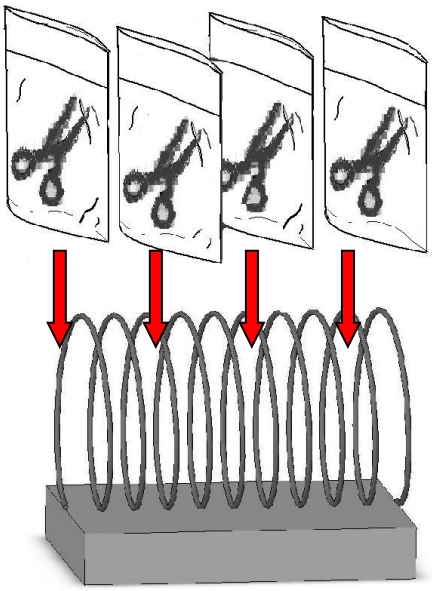


Figure 23

### 6.12.2 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.

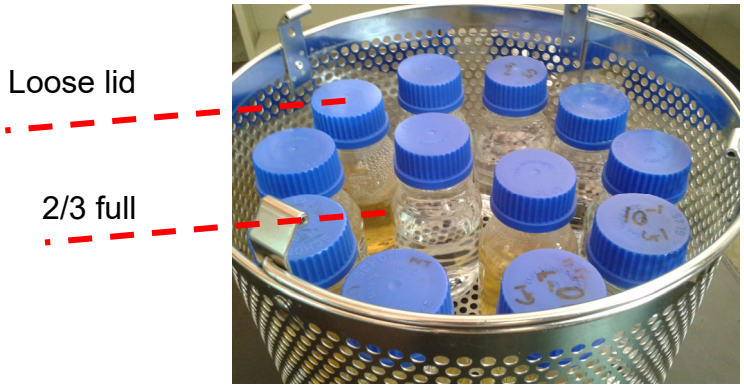



Figure 24

# 7. Recorder (SA-300VMA-R)

## 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 an USB flash drive, in the Excel csv (Comma Separated Values) format which compatible with Microsoft® Office Excel.

⚠**Note:** Insert a formatted USB flash drive before commencing a sterilization cycle.

⚠**Note:** Microsoft Office Excel 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 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

| Printer output | Description |
|---|---|
| MODEL:SA-300VMA-R | Model number |
| Version:V0.99 | Software version installed in this autoclave |
| SN：161005204-001 | Series number |
| Program： 134 Unwrapped | Program selected |
| Ster. Temp：134 ºC | Sterilization temperature |
| Ster. Time： 4 m | Sterilization duration |
| Dry Time： 15 m | Dry duration |
| Date：2020/03/13<br>Time：10:45:57 AM | Date and Time of sterilization |
| Cycle Counter ：24 | Cycles that had been started |

| Step | Time mmm:ss | Temp. ºC | Pres. bar |
|---|---|---|---|
| Start | 000:00 | 26.1 | -0.03 |
| | 000:01 | 26.1 | -0.03 |
| | 000:02 | 26.1 | -0.03 |
| | ~ | | |
| PZ1 | 000:23 | 26.2 | -0.01 |
| | 000:24 | 26.3 | -0.01 |
| | 000:25 | 26.3 | -0.02 |
| | ~ | | |
| H1 | 010:31 | 47.6 | -0.84 |
| | 010:32 | 47.6 | -0.84 |
| | ~ | | |
| PZ2 | 019:22 | 119.6 | 0.92 |
| | 019:23 | 119.6 | 0.92 |
| | ~ | | |
| S00 | 036:14 | 135.8 | 2.16 |
| | 036:15 | 135.8 | 2.16 |
| | ~ | | |
| S01 | 037:14 | 135.5 | 2.16 |
| | 037:15 | 135.5 | 2.16 |
| | ~ | | |
| S02 | 038:14 | 135.6 | 2.15 |
| | 038:15 | 135.6 | 2.15 |
| | 038:16 | 135.5 | 2.14 |
| | ~ | | |
| Exh | 040:20 | 135.6 | 2.14 |
| | 040:21 | 135.6 | 2.14 |
| | ~ | | |
| D0 | 043:22 | 98.2 | 0.08 |
| | 043:23 | 98.2 | 0.08 |
| | ~ | | |

| Step | action |
|---|---|
| Time mmm:ss | mmm: minutes starting record,<br>ss: seconds starting record |
| Temp(ºC) | chamber temperature in ºC |
| Pres(bar) | Chamber pressure in bar |
| Start | start time |
| PZ1 | 1st Pre - vacuum |
| H1 | 1st heating |
| PZ2 | 2st Pre - pulses |
| H2 | 2st heating |
| PZ3 | 2st Pre - pulses |
| H3 | 2st heating |
| PZ4 | 4st Pre - pulses |
| H4 | 4st heating |
| PZ5 | 5st Pre - pulses |
| H5 | 5st heating |
| S00 | start of sterilization |
| S02 | sterilization time recorded every 1 minutes after “S00”; and also the last sterilization time |
| EXh | exhaust of water and steam |
| D0 | dry time-started |
| D1 | dry time-finished |
| End | end of recording |

| | |
|---|---|
| D1 058:31 111.3 0.07<br>End 059:32 111.2 0.08 | |
| Ster. Temp ： 134.7 ~ 136.2 ºC | The maximum and minimum temperature detected during sterilization period |
| Ster. Pres ： 2.12 ~ 2.22 bar | The maximum and minimum pressure detected during sterilization period |
| Ster. Time ： 04:04 | Sterilization period |
| Total time ： 059:32 | Time elapsed between start and program complete |
| Program complete | Message of ending recording |
| Signature:_____ | Signature office |

### 7.2.2 Description of Summary Contents

| Printer output | Description |
|---|---|
| MODEL:SA-300VMA-R | Model number |
| Version:V0.99 | Software version installed in this autoclave |
| SN：161005204-001 | Series number |
| Program： 134 Unwrapped | Program selected |
| Ster. Temp：134 ºC | Sterilization temperature |
| Ster. Time： 4 m | Sterilization duration |
| Dry Time： 15 m | Dry duration |
| Date：2020/03/13<br>Time：10:45:57 AM | Date and Time of sterilization |
| Cycle Counter ：24 | Cycles that had been started |

| Step | Time mmm:ss | Temp. ºC | Pres. bar |
|---|---|---|---|
| Start | 000:00 | 26.7 | -0.03 |
| PZ1 | 000:23 | 26.7 | -0.01 |
| H1 | 010:31 | 47.6 | -0.84 |
| PZ2 | 019:22 | 119.6 | 0.90 |
| H2 | 020:47 | 103.3 | 0.06 |
| PZ3 | 023:15 | 119.4 | 0.92 |
| H3 | 024:43 | 103.8 | 0.07 |
| PZ4 | 027:00 | 120.0 | 0.93 |
| H4 | 028:28 | 104.0 | 0.07 |
| PZ5 | 030:32 | 119.7 | 0.92 |
| H5 | 032:00 | 103.8 | 0.07 |
| S00 | 036:14 | 135.8 | 2.16 |
| S01 | 037:14 | 135.5 | 2.16 |
| S02 | 038:14 | 135.6 | 2.15 |
| S03 | 039:14 | 135.8 | 2.16 |
| S04 | 040:14 | 135.6 | 2.15 |
| S05 | 040:18 | 135.7 | 2.16 |

| Step | action |
|---|---|
| Time mmm:ss | mmm: minutes starting record,<br>ss: seconds starting record |
| Temp(ºC) | chamber temperature in ºC |
| Pres(bar) | Chamber pressure in bar |
| Start | start time |
| PZ1 | 1st Pre - vacuum |
| H1 | 1st heating |
| PZ2 | 2st Pre - pulses |
| H2 | 2st heating |
| PZ3 | 2st Pre - pulses |
| H3 | 2st heating |
| PZ4 | 4st Pre - pulses |
| H4 | 4st heating |
| PZ5 | 5st Pre - pulses |
| H5 | 5st heating |
| S00 | start of sterilization |
| S02 | sterilization time recorded |

| | | | | | |
|---|---|---|---|---|---|
| Exh | 040:20 | 136.6 | 2.14 | | every 1 minutes after “S00”; and also the last sterilization time |
| D0 | 043:22 | 98.2 | 0.08 | Exh | exhaust of water and steam |
| D1 | 058:31 | 111.3 | 0.07 | D0 | dry time-started |
| End | 059:32 | 111.2 | 0.08 | D1 | dry time-finished |
| | | | | End | end of recording |
| Ster. Temp ： 134.7 ~ 136.2 ºC | | | | The maximum and minimum temperature detected during sterilization period | |
| Ster. Pres ： 2.12 ~ 2.22 bar | | | | The maximum and minimum pressure detected during sterilization period | |
| Ster. Time ： 04:04 | | | | Sterilization period | |
| Total time ： 059:32 | | | | Time elapsed between start and program complete | |
| Program complete | | | | Message of ending recording | |
| Signature:_____ | | | | Signature office | |

## 7.3 Storage medium

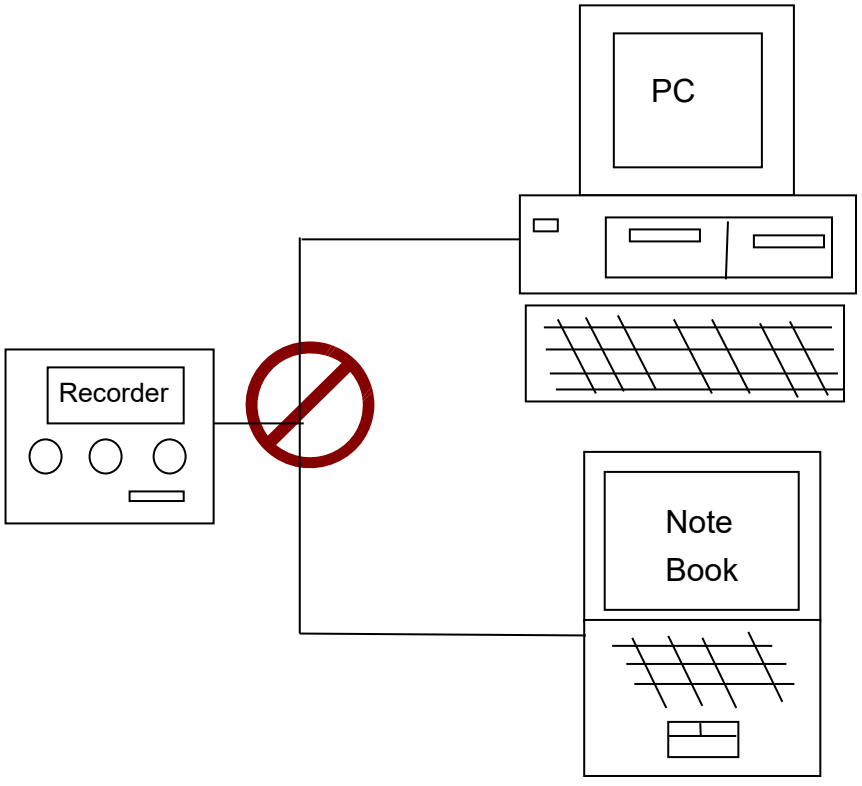
Use only recommended storage medium by the manufacturer such as USB (2.0) flash drive.

You should format your storage medium prior insert into the Recorder for the first time. You can operate on the files in this card in PC via a card reader. Data will be stored under the root directory only.

⚠**CAUTION:** You should backup your storage medium to a safe medium periodally.

⚠**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

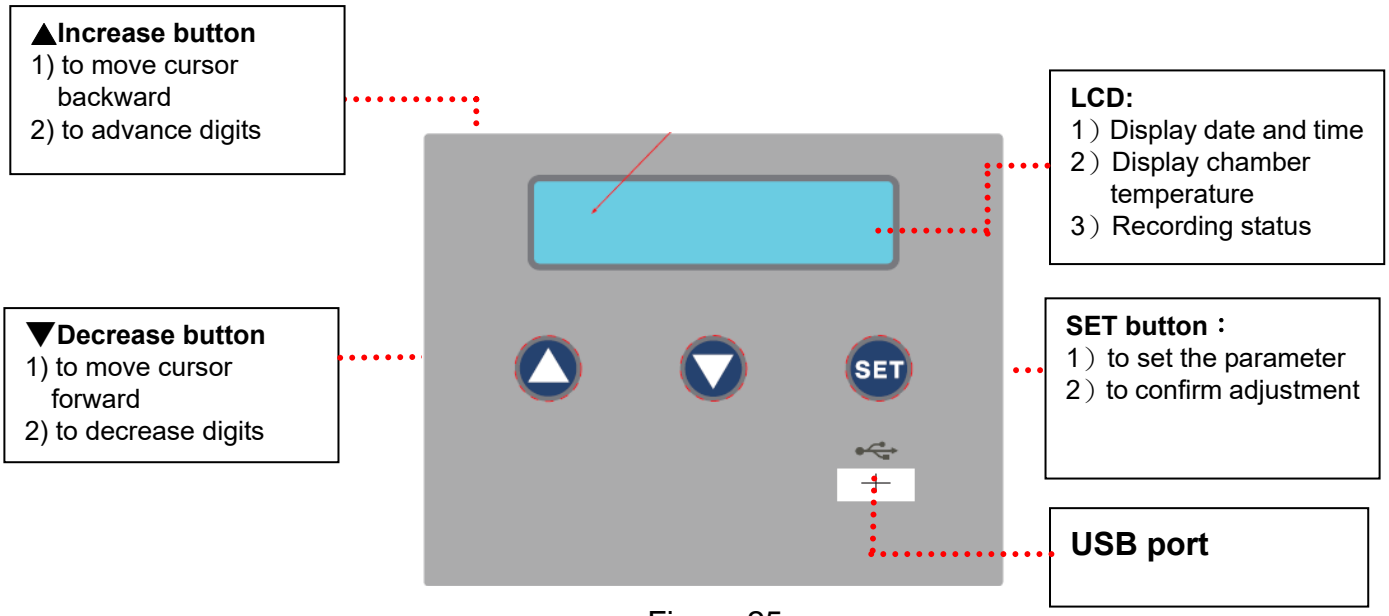



Figure 25

## 7.5 Function description of the recorder

Refer to Figure 26 for the flow chart of recorder.

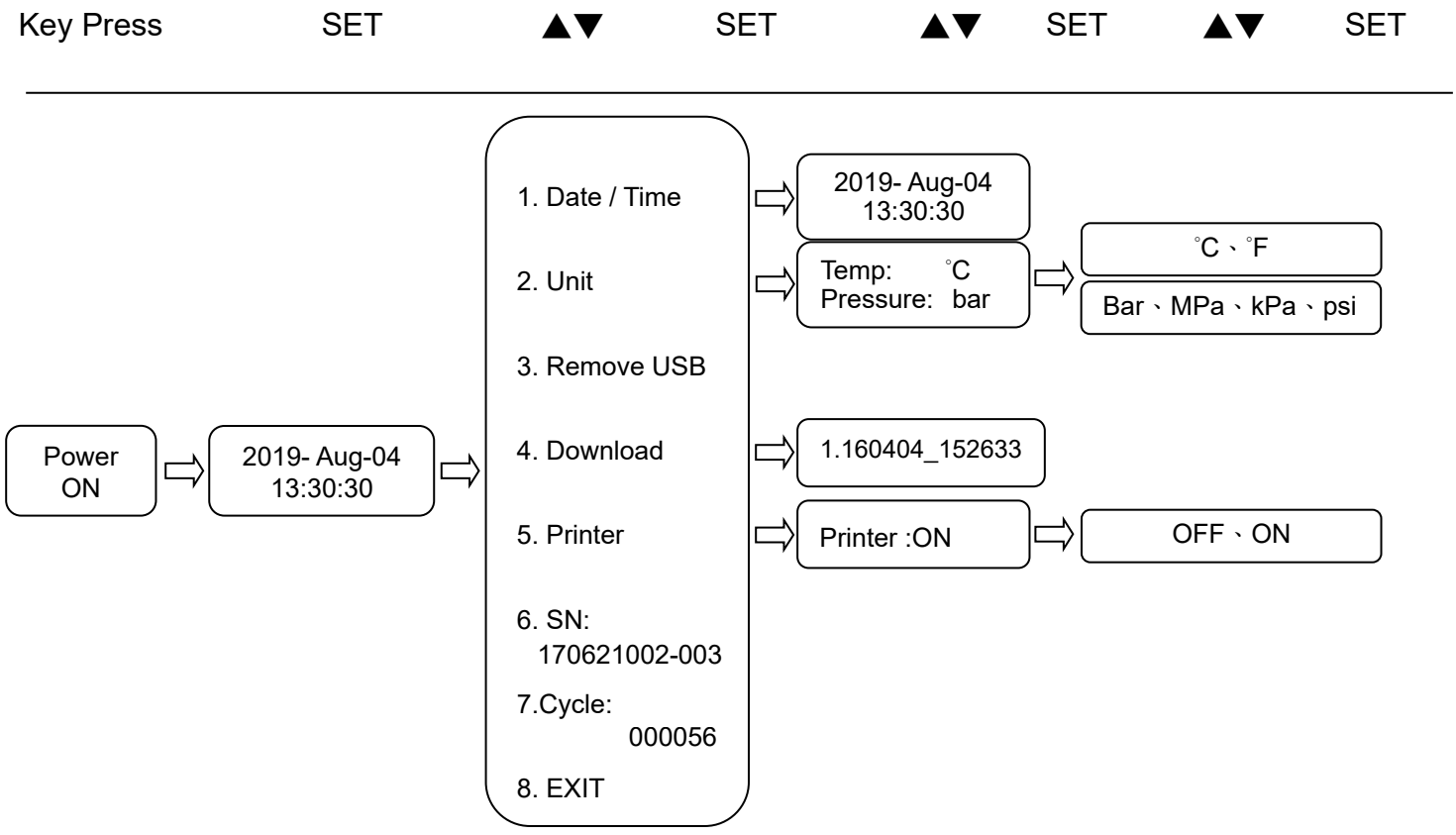



Figure 26

### 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 27.

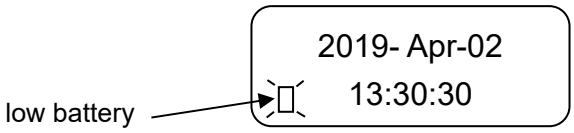



Figure 27

⚠**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.

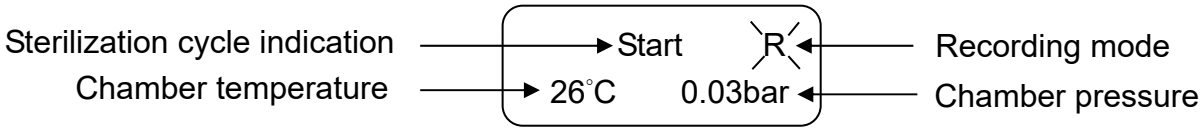



Figure 28

⚠**Note 1:** Insert a formatted USB flash drive before commencing a sterilization cycle.

⚠**Note 2:** If none of the USB flash drive being detected before commencing a sterilization cycle, the warming message "E105: No USB memory" 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 USB flash drive.

b) After completing a sterilization cycle, the data will be stored to USB flash drive; and the recorder returns to stand-by mode. The sequences of storage message are shown in the Figure 29.

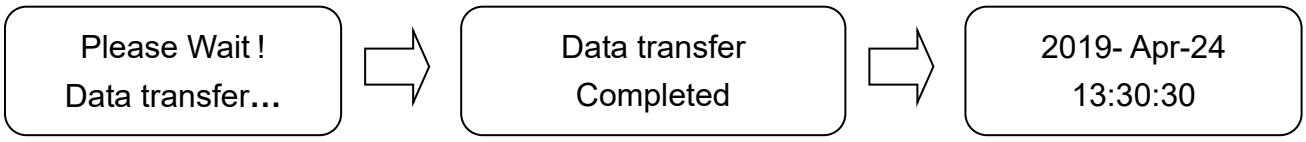



Figure 29

⚠**Note 1:** If none of the USB flash drive being detected before completing a sterilization cycle, 2 warming messages “E105: No USB memory” 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 USB flash drive.

⚠**Note 2:** You may insert a USB flash drive before completing a sterilization cycle. Use a USB flash drive as the storage medium is highly recommended by the manufacturer, and always backup your 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.

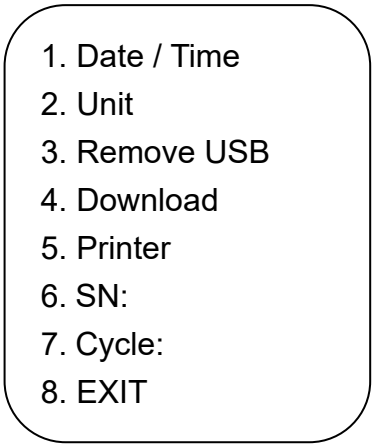



Figure 30 – Set manual

⚠**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 as shown in Figure 31.

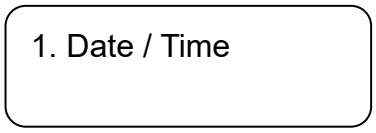



Figure 31

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 “8 EXIT” press “Set” button again returns to the stand-by mode as shown in Figure 32.

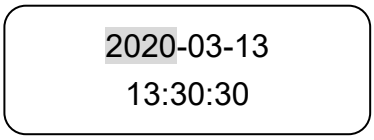



Figure 32

#### 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 as shown in Figure 33.


Figure 33

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 34.

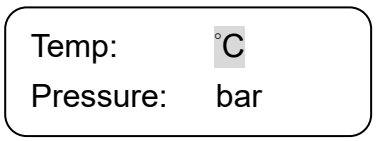



Figure 34

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 “8. EXIT” press “Set” button again returns to the stand-by mode as shown in Figure 32.

#### 7.5.2.3 Remove USB

⚠**Caution:** The data may be damaged if not follow this operation to detach the USB flash drive properly.

Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until “3. Remove USB” displayed as shown in Figure 35.

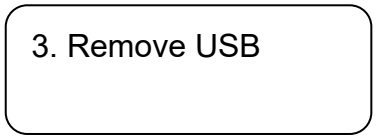



Figure 35

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

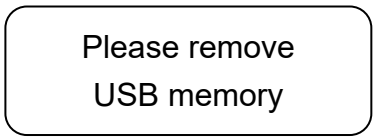



Figure 36

Press "Settings" to return to the previous page, as shown in Figure 35. Then select "8. Exit" and press "Set" to return to standby mode.

### 7.5.2.4 Download

⚠**Warning:** The recorder can operate without a USB flash drive, but the data stored in the recorder will be overwritten by the next sterilization data if the recorder memory is full. Manufacturers strongly recommend that you use a USB flash drive as a storage medium and always back up the USB flash drive to a secure area.
If you must perform sterilization without a USB flash drive, you must follow the steps below to download the data.

Insert a formatted 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 as shown in Figure 37.


Figure 37

Press the "SET" button, then press the increase (▲) or decrease (▼) to select the file to download, as shown in Figure 38.

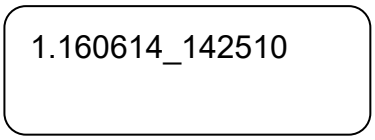



Figure 38

Press “SET” button, you will be prompt “Please Wait ! Data transfer.” and then followed by “Data transfer completed” as shown in Figure 39.

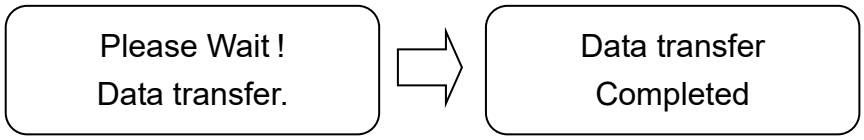



Figure 39

⚠**Note:** If none of the storage medium been detected, an message “E105: No USB memory” is presented and buzzer alarmed, the recorder than returns to previous manual after 15 seconds.

### 7.5.2.5 Printer

Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until “5. Printer” displayed as shown in Figure 40.

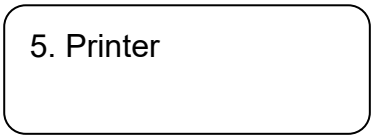



Figure 40

Press the Setup button to select the printer contents, then press the (▲) and/or (▼) buttons to select as shown in Figure 41.

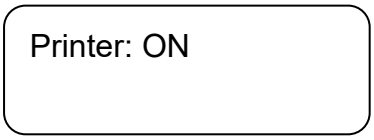



Figure 41

Press “SET” button returns to the Back to previous page.

**7.5.2.6 SN:**

Press the "SET" key in the standby mode, and then press the increase (▲) or decrease (▼) until the "6. SN:" shows the machine serial number as shown in Figure 42.

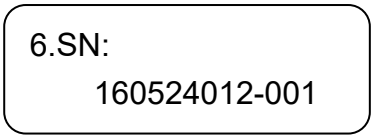



Figure 42

**7.5.2.7 Cycle:**

Press the "SET" key in the standby mode, and then press the increase (▲) or decrease (▼) until the "7. Cycle:" shows the number of machine uses, as shown in Figure 43.

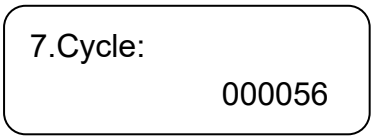



Figure 43

**7.5.2.8 Exit**

Press “SET” button in the stand-by mode and then press increase (▲) or decrease (▼) until the “8. Exit” displayed as shown in Figure 44.

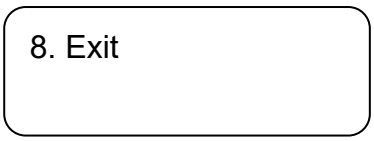



Figure 44

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

## 7.6 Message and troubleshooting (for recorder)

| Symptom | Solution |
|---|---|
| No display | - Turn on the main switch.<br>- Plug the power cable.<br>- Check if bad connection.<br>- Contact local distributor for service |
| E101: Temp. Sensor fail | - Contact local distributor for service |
| E103: Pressure sensor fail | - Contact local distributor for service |
| E105: No USB memory | - Insert a USB flash drive.<br>- Detach and re-insert memory card again |
| E107: USB 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: USB formatter error | - Re-format the USB flash drive.<br>- Replace another USB flash drive.<br>- Contact local distributor for service |
| E109: EEPRM fail | - Replace another USB flash drive.<br>- Contact local distributor for service |
| E125: Keyboard fail | Contact local distributor for service |
| E135: Abnormal of the cycle | - Check the power supply to the Autoclave.<br>- Contact local distributor for service |
| E155: Password fail | 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. Test Instructions

## 8.1 Biological performance of sterilizers

It is commonly used as a challenge organism for sterilization validation studies and periodic check of sterilization cycles. The biological indicator contains spores of the organism on filter paper inside a vial. After sterilizing, the cap is closed, an ampoule of growth medium inside of the vial is crushed and the whole vial is incubated. A color and/or turbidity change indicates the results of the sterilization process; no change indicates that the sterilization conditions were achieved; otherwise the growth of the spores indicates that the sterilization process has not been met.

An example of Raven ProTest is description as following:

1. Please put one or more Raven ProTest units in a horizontal position in the most difficult to sterilize locations and run cycle.

⚠**Warning:** After sterilization, handle unit (biological indicator) with care.

⚠**Warning:** Raven ProTest is trademark of Mesa Laboratories, Inc.

1. After the Biological indicator has cooled, crush the media ampoule by squeezing the sides of the plastic tube or by using the tool provide.
2. Place processed unit(s) and one unprocessed (control) unit in a vertical position in an incubator at 58-62℃ for steam (Geobacillus steaothermophilus) for 24hours.
3. Begin monitoring the incubated units after 12-18hours. Record observations.
4. The control unit should exhibit turbidity and/or color change to or toward yellow.
5. A fail sterilization cycle is indicated by turbidity and/or color change to or toward yellow. A test unit that retains its original color indicates the sterilization parameters have been met.
6. More detail information please asks your dealer of biological test.

## 8.2 Air removal (Bowie-Dick type test pack)

A commercially available Bowie-Dick type test pack that is of a size appropriate to the chamber being tested. The indicator is a heat sensitive sheet that is placed in the middle of a packet made up of various layers of paper and foam rubber.

The packet for the B&D test must be inserted on it own, preferably on the lowest tray, with the label facing up. After performing the cycle, immediately verify the test. Being careful while handling the packet (It is still hot), remove the indicator sheet and follow the instructions given in the package for evaluating the result of test.

An example of B&D test (that is SPS medical company) is description as following:

1. Assembly of the cube is reference Figure 45.

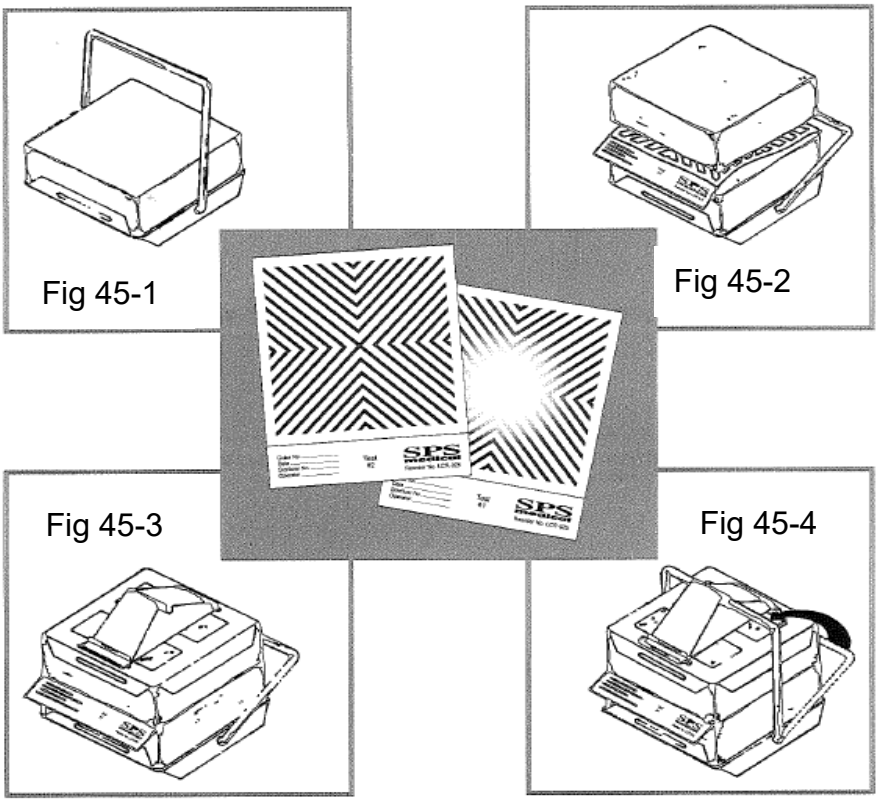



Figure 45

2. Place the pre-assembled Cube in the bottom section of the sterilizer rack, over the drain, in an otherwise empty chamber.
3. Running a steam cycle by sterilizer.

4. After processing, wear heat-resistant glover to remove the Cube from the sterilizer and allow to cool.

⚠**Warning:** The metal clamp is hot at this stage of test.

5. Unlock the swing-bar and remove the indicator sheet from the center of the Cube.
6. The indicator test sheet should show a uniform color change. An incomplete color change may indicate sterilizer malfunction and should be immediately reported to the supervisor for review.
7. Complete the information on the test sheet and retain as permanent record.
8. More detail information please asks your dealer of B&D test.

⚠**Warning:** SPS is trademark of SPS medical company.

## 8.3 Helix test

The Helix test represents a hollow A-type load, i.e. the load with the most critical characteristics.

**Carry out the test as follows (Example of TST LOADCHEK STEAM):**

⚠**Warning: TST LOADCHEK STEAM** is trademark of ALBERT BROWNE LTD.,

1. Place a test strip (Order code : 3783) inside the capsule.

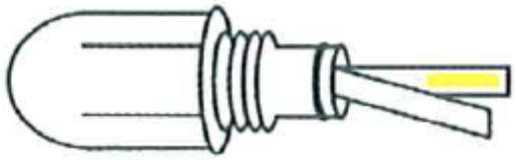


Figure 46

Figure 47

2. Close the capsule.
3. Place the test kit on the lower tray in the chamber.
4. Select and start B&D cycle at control panel.
5. Once the cycle is completed, open the door and remove the test.

⚠**Warning**: The HELIX Test kit will be very hot!

6. Open the capsule and remove the test strip.
7. Please ask your dealer of HELIX test.
8. The result is as follows:

**Incorrect result:**


Figure 48

**Incorrect result:**

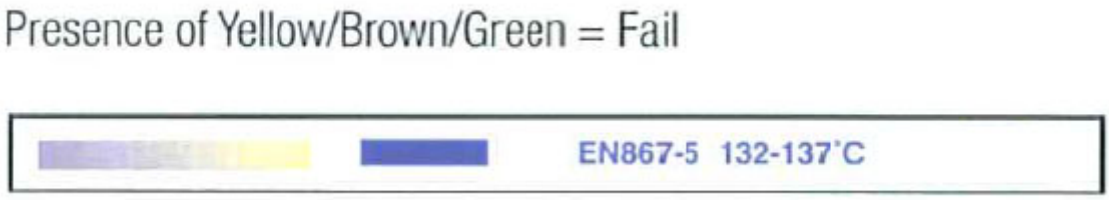



Figure 49

**correct result:**


Figure 50

# 9. 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.

## 9.1 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.

## 9.2 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 51 to Figure 53.

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

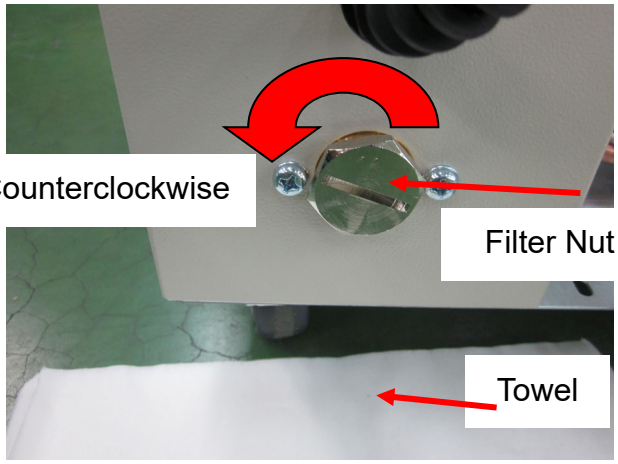
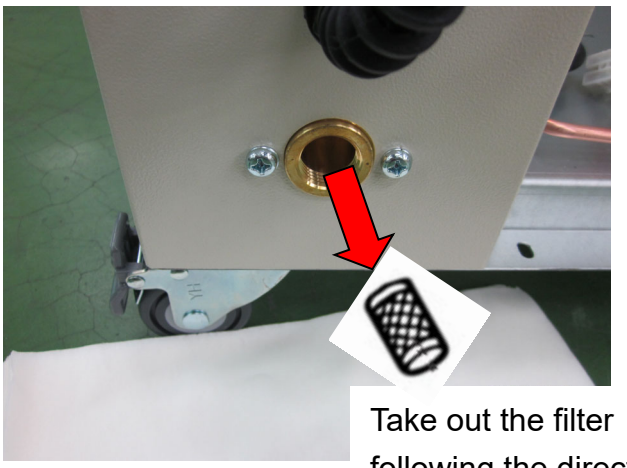



Figure 51



Take out the filter following the direction of the arrow.

Figure 52

Take out the filter carefully, and flush it with water to clean it. Assemble it back as shown in Figure 53.

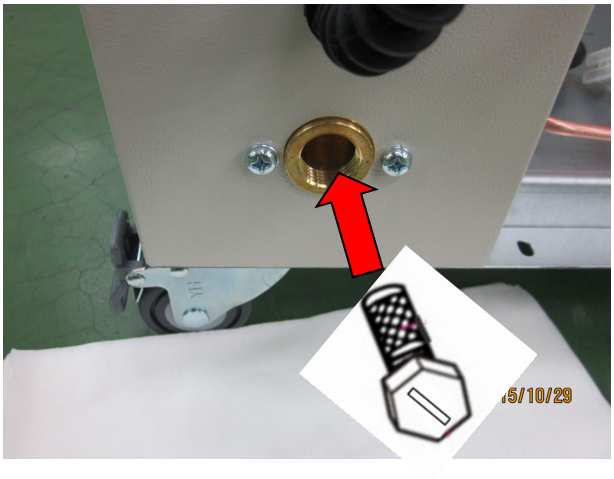


Figure 53

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

## 9.3 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 54.
- Clean the dirt off at filter of the bottom of the chamber as Figure 54.

⚠ **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.

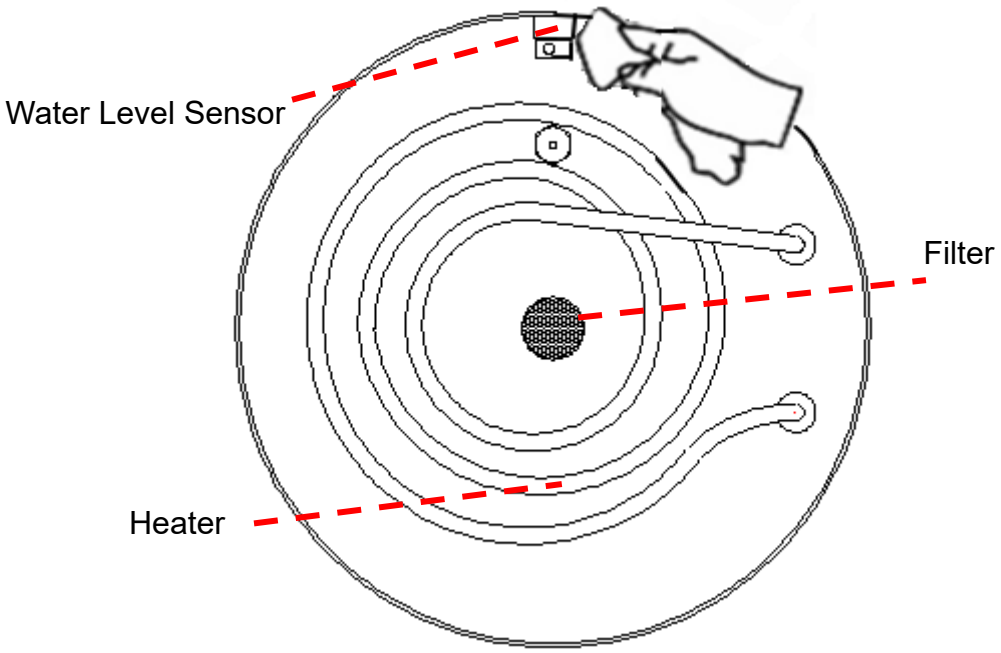



Figure 54

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

## 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

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 55.

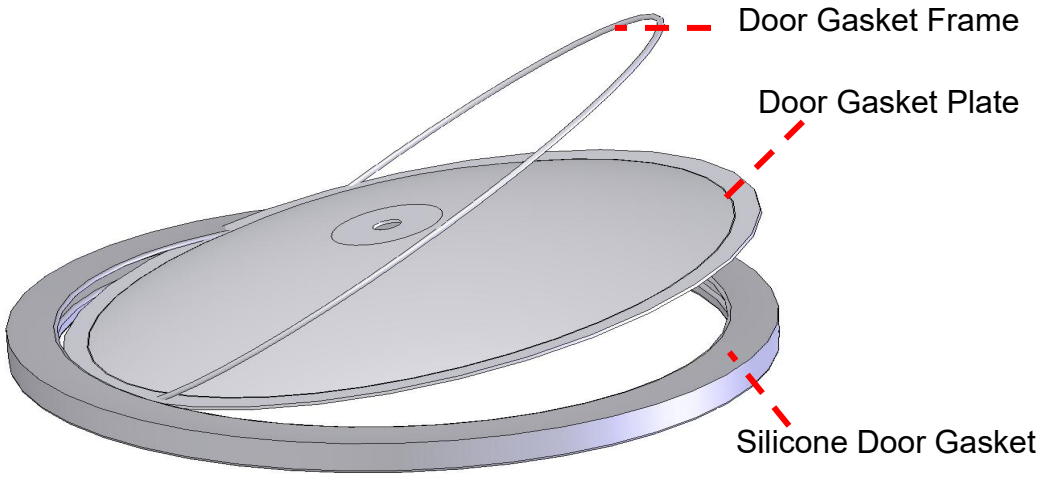



Figure 55

2. Check if the door gasket frame, door gasket plate are installed into the gasket completely as shown in Figure 56.

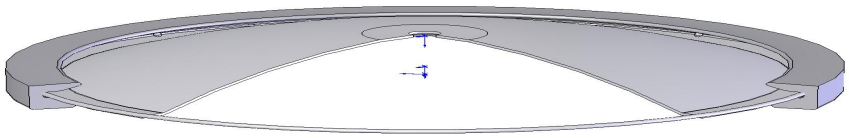


Figure 56

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 57. Take thick end of silicone door gasket of the installation direction while pressing the gasket into the groove. Refer to Figure 58 for the correct direction.

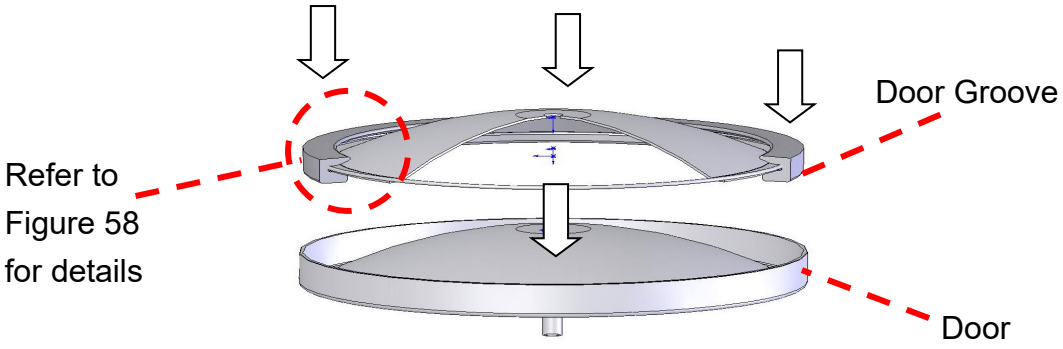



Figure 57

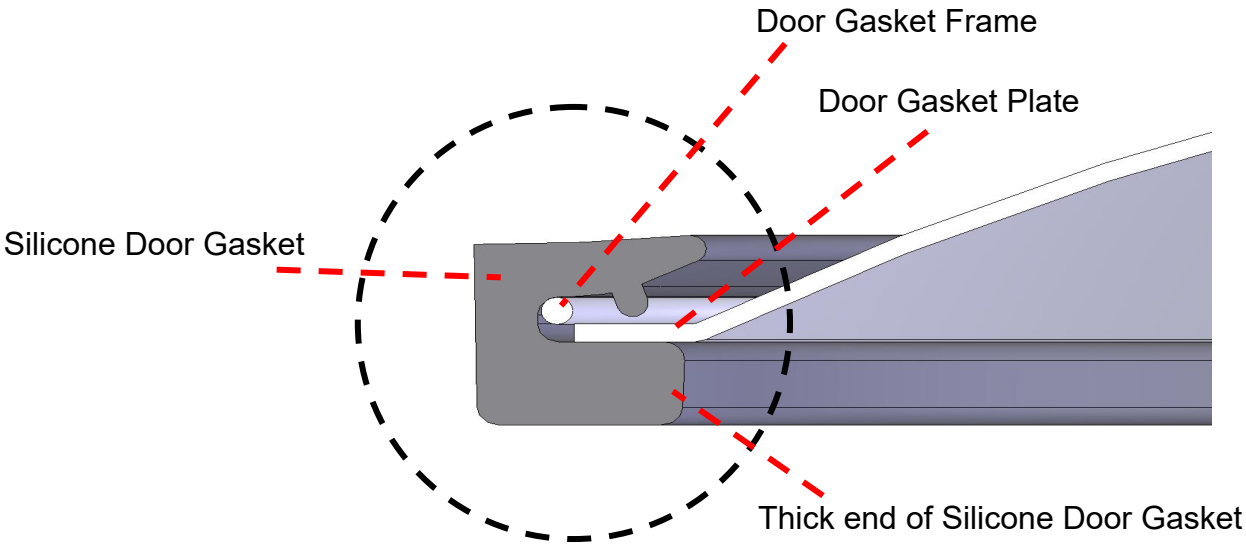



Figure 58

⚠**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 "7.3 Monthly" maintenance to clean the sensor. |
| | Filter blocked | Follow "7.2 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 "7.4 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 "STANDARD" 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. |
| No Vacuum | 1.leakage of the piping | Contact local distributor for service. |
| | 2.Vacuum pump fail | |

⚠**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

| 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-300VMA | SA-300VMA-R |
|---|---|---|
| Chamber Capacity (L) | 50 | |
| Maximum Instrument Length (mm) | 600 | |
| Maximum Load (unpouched) (g) | 10,000 | |
| Maximum Load (pouched) (g) | 1,000 | |
| External Dimensions (mm) | 980(D) x 600(W) x 600 (H) | |
| Chamber Size (mm) | 300 Diameter x 710 Depth | |
| Gross Weight (kg) | 104 | |
| Voltage/Wattage (Heater) | 220V-240V AC, 50/60Hz, 2900W | |
| Fuses | 20A x 2, No Fuse (circuit) Breaker | |
| Water Capacity per Cycle (ml) | 1000 ~1200 | |
| Sterilization Temperature (°C) | 121 / 134 | |
| Working Environment | ● Indoor use;<br>● Under 1,000m (altitude);<br>● Temperature 5°C to 40°C;<br>● Relative Humidity 80%RH@31°C to Relative Humidity 50%RH@40°C;<br>● Voltage fluctuation ±10 %;<br>● Transient overvoltages category II;<br>● 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 2.55 bar(2.6 kgf/cm²) | |
| 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 | |
| Recorder | — | Yes |
| Program Selections | Wrapped/unwrapped, Dry/no dry, Liquid. | |
| Temperature Selection | 121°C/134°C | |
| Drying Function | 0, 15, 30, 35, 40 min. (Re-Dry: 10 min.) | |
| Additional controls | PRION, B.D. Test, Pump Test, Liquid, Reset/Stop, Vacuum release, Emergency | |
| Standard Accessories | Basket x 2; Heater cover; 2000cc bottle x 1 pcs | |
| Life Time | 7 Years | |

## 12. 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:

_____

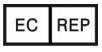
Country: _____ Tel: _____ Fax:_____

Date of Purchase: _____ Model No.:_____

Series No.: _____

Distributor:

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

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

422-03010-14