

Technical Publications

ASS0011

REV - E

CE 0197

Steam Sterilizer Operation Manual

Operation Documentation

Regulatory Requirement

This product complies with regulatory requirements of the following European Directive 93/42/EEC concerning medical devices.

Revision	Date	Description
Rev-A	2011-11-24	First release of the document
Rev-B	2011-11-24	Version Update
Rev-C	2012-10-23	Version Update
Rev-D	2013-12-20	Version Update
Rev-E	2014-08-18	Version Update

Please verify that you are using the latest revision of the document. If you need to use an older revision, please contact your distributor. Please refer to the revision history table for more information.

Original Documentation

The original documentation is stored in the following location:

Declaration of Conformity

We hereby declare that the product complies with the requirements of the European Directive 93/42/EEC concerning medical devices. The product is intended for use as a steam sterilizer. The product is designed to be used in accordance with the instructions for use provided with the product.

Revision History

REV	ISSUE DATE	REASON FOR CHANGE
Rev-A	2010.11.24	First Issue
Rev-B	2011.11.24	Version Update
Rev-C	2012.10.23	Version Update
Rev-D	2013.12.30	Version Update
Rev-E	2014.08.16	Version Update

Please verify that you are using the latest revision of this document. Information pertaining to this document is maintained on manufactory. If you need to know the latest revision, please contact your distributor, sales representative, or our service dept.

Regulatory Requirements

Conformity Standards

The content of this manual is used for sterilizer.

Above sterilizer accords with the requirements of European Class B:

93/42/EEC

97/23/EC

EN 61010-1:2001

EN 61010-2-040: 2005

EN 13060:2004

EN 61326-1:2006

Certifications

Manufactory has certified by EN ISO 9001 and EN ISO 13485.

Original Documentation

The original document was written in English.

Declaration of Conformity

Council Directive 93/42/EEC concerning medical devices:

The CE label affixed to the product testifies compliance to the Directive.

The location of the CE marking is shown in this manual. In this manual there are present the CE certification and the Conformity. Check appendixes.

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Chapter 1 Introduction

1.1 Attention

- ❖ This operation manual contains necessary and sufficient information to operate the sterilizer safely, like optimal usage, safe and reliable operation, regular and correct servicing requirements.
- ❖ Read and understand all instructions in this manual before attempting to use the product.
- ❖ Keep this manual with the sterilizer at all times. Periodically review the procedures for operation and safety precautions.

1.2 Usage Indications

Application to all wrapped or non-wrapped, solid, hollow load products type A and porous products or related articles.

This sterilizer can be used for dental clinic, laboratory, surgical room, emergency room, ophthalmology, gynecology and steam, cosmetic hospital and so on, by doctors and professionals.





1.3 Contraindication

There is no any contraindications of this equipment.







Chapter 2 Safety

2.1 Explanation Symbol

Device Icon Description

	"ATTENTION" –Intended to alert the user to refer to the operation manual or other instructions when complete information cannot be provided on the label.
	"ATTENTION" –Pay attention to the high temperature in the chamber, and the sterilizer exterior when exhausting system is running.
	"Protective Earth"Indicates the protective earth (grounding) terminal.
	"CAUTION"- Dangerous voltage" (the lightning flash with arrowhead) is used to indicate electric shock hazards.

Label Icon Description

	Symbol for "SERIAL NUMBER"		Symbol for "MANUFACTURER"
	Symbol for "CATALOGUE NUMBER"		Symbol for "AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY"
	Symbol for "DATE OF MANUFACTURE"		Symbol for "CAUTION"

Manual Prompt

Note	Indicates that concerned information is easier or helpful in the operation.
Caution	Indicates that a potential hazard may exist through inappropriate conditions or actions, which will or can cause: <ul style="list-style-type: none"> • Minor injury; • Property damage; • Damage to machine.
Warning	Indicates that a specific hazard may exist through inappropriate conditions or actions, which will or can cause: <ul style="list-style-type: none"> • Severe personal injury; • Substantial property damage; • Substantial damage to machine.

NOTE: Indicates that precautions or recommendations should be used in the operation.

2.2 General Safety Recommendations

- ❖ The user is responsible for operating and servicing the sterilizer in accordance with the instructions listed in this manual.
- ❖ The sterilizer cannot be used for liquids.
- ❖ The sterilizer has not been designed to operate in the presence of gas or explosive vapors.
- ❖ The trays and the load will still be hot at the end of each cycle. Use the tray holder to remove each tray from the chamber.
- ❖ Do not open the door of the chamber during the sterilization programs.
- ❖ Do not put your hands or face on the cover of the water tank when the sterilizer is running.
- ❖ Do not remove the instruction plate or any labels from the sterilizer.
- ❖ Do not pour water or any other liquids over the sterilizer.
- ❖ Do not fill the water tank with caustic liquids.
- ❖ Do not place caustic matter in the chamber.
- ❖ Use only high quality distilled water.
- ❖ Unplug the mains power supply before inspecting or servicing the machine.
- ❖ Only an approved technician using original spare parts can carry out repair and maintenance.
- ❖ In case of transport, drain both water tanks completely, allow the sterilization chamber to cool down and preferably pack the device in its original packaging.
- ❖ When the temperature is over 40°C, use the tools provided to remove articles from the sterilizer.
- ❖ If the sterilizer needs to be moved or lifted, it should be done by two people.
- ❖ Do not cover the water tank cover while the sterilizer is running.

2.3 Safety Parts

Temperature Protection

Part Name	Function
Temperature Protector (Steam Generator)	Cut off current when the steam generator temperature is too high.
Temperature Protector (Heating Ring)	Cut off current when the heating ring temperature is too high.

Electricity Protection

Part Name	Function
Double Fuse	Cut off current when the connected power is too high or unstable.
Electronic Filter	Filter the electromagnetic interference during working

Mechanical Protection

Part Name	Function
Jiggle Switch	To ensure the door is closed completely for avoiding the risk of safety
Tray Tong	Avoid scald when removing articles from the chamber

Control Part

Part Name	Function
Temperature Sensor (Internal)	To measure temperature inside the chamber
Temperature Sensor (Heating Ring)	To measure temperature of the heating ring
Temperature Sensor (Steam Generator)	To measure temperature of the steam generator
Pressure Sensor	To measure pressure of the chamber
PCB Control	Control system for controlling all the process of sterilization

CAUTION MANUFACTURER IS NOT HELD RESPONSIBLE FOR ANY ARBITRARY DISASSEMBLY, AMENDMENT WITH THE UNIT, BY UNAUTHORIZED PERSON OR UNPROFESSIONAL TECHNICIAN

2.4 Operation Risk

Please take attention on avoiding operation risks during operation.

Scald risk

- ❖ Every time open the door after the sterilizer finishes the cycle, please keep an appropriate distance, because the chamber still has rudimental steam with high temperature, avoid to be scalded.
- ❖ Every time open the door after the sterilizer finishes the cycle, please do not touch the main door and chamber, because of high temperature, avoid to be scalded.

Pollution risk

Please clean the chamber after every time using, avoid rudimental contamination left inside the chamber.

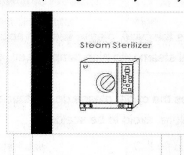
2.5 Protection Device

Device Name	Function
Rubber or fabric glove	Useful for loading and removing articles, avoid scald.

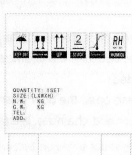
Chapter 3 Receiving and Installation

3.1 Check the Package

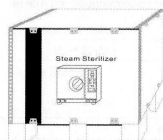
Please check package carefully when you receive the product.



Front



Flank

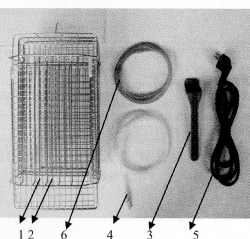


Item	C12L	C18L	C23L
Packing Size	655x560x495mm	655x560x495mm	765x560x495mm
Gross Weight	53kg	56kg	63kg

3.2 Unpack the Accessories

Open the door and take out all the accessories, items listed below:

No.	Part Name	Qty
1	Rack	1 piece
2	Tray	3 sets
3	Removal tool	1 piece
4	Draining tube	1 piece
5	Power supply cable	1 piece
6	Door gasket	1 piece

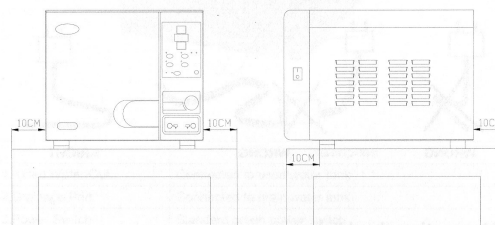


3.3 Optional Accessories

Name	Model	QTY	Picture
Mini Printer	PINTER20	1	

3.4 Installation Environment

The sterilizer should be set in a place where at least has 10cm distance with each side (20cm from the top) as following:



NOTE:

The sterilizer should be set in a place with good ventilation.

The operation temperature: 5-40℃.

The humidity of environment: ≤85%.

The atmosphere pressure: 860Hpa~1060Hpa.

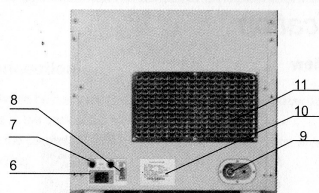
An earth connection is essential.

CAUTION DO NOT PUT ANY STUFF WHICH EASILY MELTS NEAR THE STERILIZER.

3.5 Set

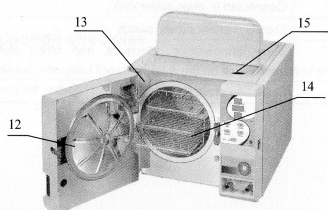
- ❖ The sterilizer should be set on level table or place; the front-end should be a little bit higher than the back-end.
- ❖ The sterilizer cooling and vent area should not be jammed or blocked.
- ❖ Do not put any stuff on the top of the sterilizer.

4.2 Rear View



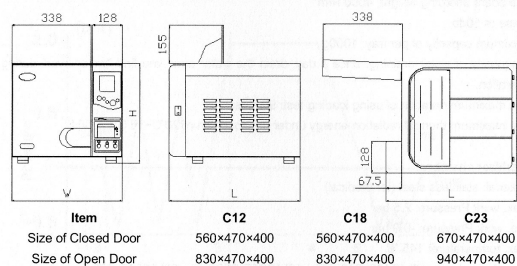
Name	Description
6.Power socket	Connected with power source
7.Fuse	Protect product when the power is not stable
8.Printer out port	Connect a mini printer and output sterilization records
9.Relief Valve	Leak pressure automatically when over working pressure
10.Nameplate	Basic information of manufacturer
11.Vent area	Output heat from this vent area by condenser

4.3 Open View



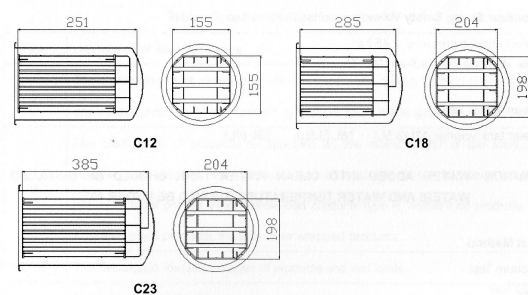
Name	Description
12. Door Gasket	For sealing the door
13. Air Filter	Filter the air and ensure air into chamber is clean
14.Tray and Rack	To load the articles
15. Water Filling Port	To fill water manually

4.4 External Dimension



4.5 Load Dimension

The loading size of sterilizer as followed:



4.6 Specification

Basic specification

Rated Voltage: a.c.220V-230V, 50Hz

Rated power: 12L&18L/1500VA, 23L/1700VA

Fuse: T10A

Operation temperature: 5~40℃
 The board affording weight: 4000 N/m²
 Noise :< 50db
 Maximum capacity of per tray: 1000g
 Frequency of water draining: once a day, drain the water once you find "water over" during operation.
 The maximum duration of using loading test: 90mins.
 The maximum thermal radiation energy under the condition of 20℃~26℃:<2000J.

Sterilizer chamber:

Material: stainless steel (for medical)
 Max. work Pressure: 2.5 bar
 Min. work Pressure: -0.9 bar
 Max. temperature: 145℃
 Chamber volume: 12L(Φ192×340mm) 18L(Φ245×360mm) 23L(Φ245×470mm)
 Loading size: 12L(155×155×250mm) 18L(198×204×285mm) 23L(198×204×385mm)
 Max. loading weight: 12L (3.02kg/cm²) 18L (3.07kg/cm²) 23L (3.21kg/cm²)
 Working pressure/temperature: 1.10~1.30bar/121℃~122℃; 2.10~2.30bar/134℃~135℃
 Water volume for one cycle: 0.16L (min) 0.18L (max)

Sterilizer Steam Safety Valve:

Safety release pressure: 2.45 bar
 Max. Working temperature: 160℃

Clean Water Tank

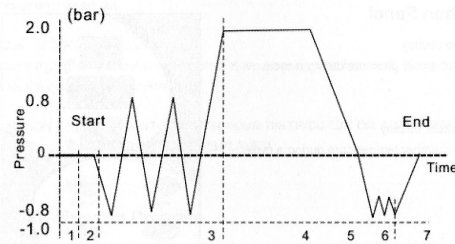
Water tank volume: 12L(3.5L) 18L (3.5L) 23L (4L)

CAUTION WATER ADDED INTO CLEAN WATER TANK SHOULD BE DISTILLED WATER! AND WATER TEMPERATURE SHOULD BE UNDER 40℃.

Test Method

Vacuum Test
 B&D Test
 Helix Test

4.7 Sterilization Cycle



1-2 pre-heating
 2-3 pre-vacuum
 3-4 sterilizing
 4-5 air-discharging
 5-6 drying
 6-7 stabilizing
 1-7 full cycle

Table—Types of sterilization cycles

Type	Description of intended usage
B	The sterilization of all wrapped or non-wrapped, solid, hollow load products type A and porous products as represented by the test loads in this standard.
S	The sterilization of products as specified by the manufacturer of the sterilizer including non-wrapped solid products and at least one of the following: porous products, small porous items, hollow load products type A, hollow load products B, single wrapped products, multiple-layer wrapped products.
NOTE 1	The description identifies ranges of products and test loads.
NOTE 2	Non wrapped sterilized instruments are intended either for immediate use or for non sterile storage, transport and application (e.g. to prevent cross infection).

Chapter 5 Panel and Functions

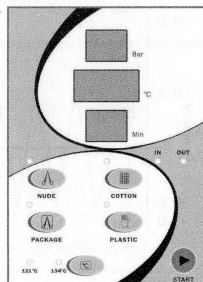
5.1 Function Panel

5.1.1 Pressure display

Indicates the chamber pressure during a cycle.
Unit: Bar.

5.1.2 Temperature display

Indicates the chamber temperature during a cycle.
Unit: °C



5.1.3 Phase/ Error cord display

Indicates sterilization phase during operation, refer to the appendix 1. When the sterilizer alarms, a corresponding error code will be displayed. Check the malfunction parts according to the alarm cord and handle form (When it goes wrong, please contact your distributor or authorized person promptly).

5.2 Controlling Button

5.2.1 "NUDE" button

Used for unwrapped instruments at 121°C or 134°C, default 134°C.

5.2.2 "COTTON" button

Used for cotton yarn, fabric at 121°C or 134°C, default 134°C.

5.2.3 "PACKAGE" button

Used for wrapped instruments at 121°C or 134°C, default 134°C.

5.2.4 "PLASTIC" button

Used for plastic or rubber instruments at 121°C or 134°C, default 134°C.

5.2.5 "°C" button

Working temperature selection button, 121°C or 135°C.

5.2.6 "IN" indicator

Low water indicator, it will illuminate when the level of reservoir water is too low, warn you that water should be added in.

5.2.7 "OUT" indicator

Full Water indicator, it will illuminate when the waste water level is full, warn you that water should be drained out.

5.2.8 "START/STOP" button

Start the program that has been selected. Keep pressing it for 5 seconds during a program any time, the cycle will be terminated.

CAUTION PLEASE CONTACT WITH YOUR DISTRIBUTOR OR AUTHORIZED PERSON WHEN ERROR CODE DISPLAYED.

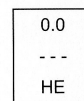
5.3 Sterilization Program

When switched on, you can select different programs by pressing different button:

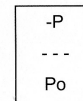
Button	Temperature	Pressure	Vacuum	Sterilization Time	Drying Time
NUDE	134°C	2.1bar	1	5min	9 min
NUDE	121°C	1.1bar	1	20min	9 min
COTTON	134°C	2.1bar	3	5min	18min
COTTON	121°C	1.1bar	3	20min	18min
PACKAGE	134°C	2.1bar	3	6min	9 min
PACKAGE	121°C	1.1bar	3	20min	9 min
PLASTIC	134°C	2.1bar	1	5min	9min
PLASTIC	121°C	1.1bar	1	20min	9min

5.4 Window of Sterilization Process

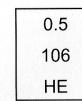
3- time Vacuum program, example: PACKAGE 134 Degree



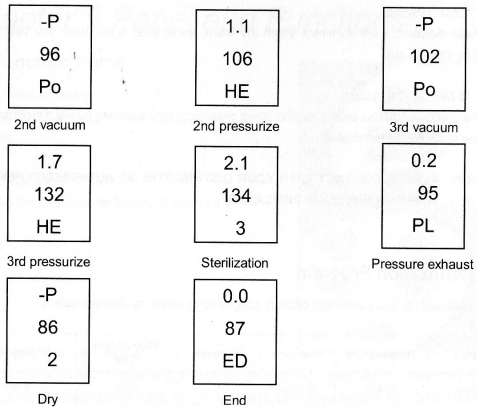
Pre-heat



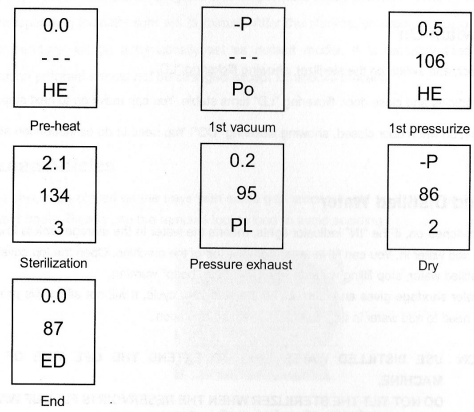
1st vacuum



1st pressurize



1-time Vacuum program, example: NUDE 134 Degree



Chapter 6 Operation Process

6.1 Switch On

Open door, and switch on the sterilizer, showing flickering "LD".

To load articles and close door, flickering "LD" turns stable. You can move on to next step.

If switch it on when door closed, showing flickering "DO". You need to do as introduced above.

6.2 Add Distilled Water

When switched on, if the "IN" indicator lights, means the water in the storage tank is low and need to add water in. You can fill in water from the top of the machine. Open the top cover and fill in distilled water, stop filling water in when you hear "beep" warning.

If the water shortage gives an alarm during the sterilizing cycle, it will not affect this process, but you need to add water in time to ensure the next operation.

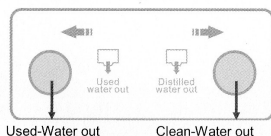
CAUTION USE DISTILLED WATER ONLY TO EXTEND THE LIFE TIME OF THE MACHINE.

DO NOT TILT THE STERILIZER WHEN THE RESERVOIR IS FULL OF WATER.

6.3 Alarm if Used Water Reservoir is Full

The "OUT" indicator light illuminates during sterilizing, which means that the used water reservoir needs to be drained out.

Connect the water tube to the machine left lower corner inlet connector as followed picture arrow marked.



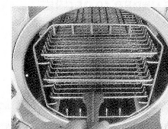
Generally, the maximum temperature of drained water should be under 70°C. If it is higher, you need to check whether the fan operates normally, or contact the local distributor immediately, we will offer our best service to you in no time.

6.4 Select Program

Select the required sterilization program and temperature which you need. When you choose, the corresponding indicator light will illuminate. After the sterilization program being selected, the temperature will be automatically set as default model. It is recommended that the sterilization program should not be changed except for special process.

6.5 Load Articles

Articles should be placed on the trays with some gap among them, so that the steam can be ventilated freely. Please use the removal tool to load to avoid scalding.



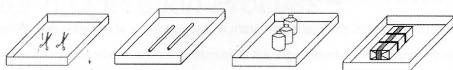
Arrangement on Trays before Sterilization

Read the following instructions for proper usage and maintenance of articles and material.

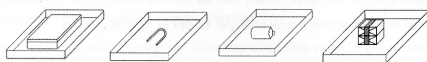
- ❖ Make sure that the articles of different materials are separated and placed on different trays.
- ❖ In case of carbon steel articles, place a towel or paper-wrap between the tray and the articles in order to avoid a direct contact.
- ❖ Any articles with covers must be sterilized in an open position.
- ❖ Make sure that the articles remain apart during the sterilization cycle.
- ❖ Do not overload the trays.

Drawings explanation:

RIGHT



WRONG



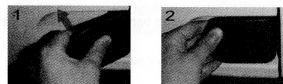
CAUTION RECOMMENDED TO CLEAN THE ARTICLES BEFORE LOADING.

ATTENTION IT IS HELPFUL TO TURN ON POWER FOR WARMING 5 TO 10MINS BEFORE RUNNING PROGRAM, IF THE ENVIRONMENTAL TEMPERATURE UNDER 10 DEGREE

6.6 Close the Door

Close the door after loading articles. Pull the handle out like picture showing, then set back the handle. The "LD" code will flicker if the door not closed properly.

When close the door, however, if the chamber is warm and steam still be left in it, you may feel a strong resistance when you close the door. You just have to push harder and latch the handle completely. You may also leave the door open to release the steam and kindly close the door again. Or you can push the door hardly in while you turn the door handle. Anyway, latch the door handle completely. If you still unsure the door has been closed properly, you can also adjust the door (refer to adjusting the sterilizer door)



CAUTION THE DOOR SHOULD BE SHUT TIGHTLY BEFORE RUNNING PROGRAM TO AVOID THE DANGER.

ATTENTI IF DOOR HAS BEEN OPENED DURING THE CYCLE, THE STERILIZER ON WILL DISPLAY ALARM CODE "E6". IF SO, PLEASE PRESS THE "START/STOP" TO CANCEL THE ALARM, THEN CLOSE THE DOOR COMPLETELY AND RESTART.

6.7 Start a Program

Close the door completely, and press "Start/Stop" button to start a working cycle. The sterilizer will heat; sterilize and drying the instruments automatically for you. The whole process will take 20-50 minutes. It depends on the object being sterilized, the initial temperature, and the program you selected.

The Process of Sterilization

Pre-heating: Display HE.

Chamber will start to be pre-heating when you are turning on the power switch, and keeping the chamber warm.

0.0

HE

Pre-vacuum: Display -P.

Outputted the air in the chamber, and inputted steam in the chamber, run 3 cycle times.

-P

Po

Heating: Display HE.

Keep heating until getting the time of sterilization.

0.5
106
HE

Sterilization: Display TIME.

Display sterilizing time and temperature. The sterilizer keeps the temperature of sterilization with time is counted down.

1.1
121
20

2.1
134
4

Vacuum drying: Display PL OR TIME

Releasing pressure until the pressure down to the 0 bar or -P.

0.2
95
PL

-P
86
2

Display dry-vacuum time and the temperature. Draining used water and steam. Sterilizer will automatically switch to vacuum drying process after the steam pressure drop and chamber temperature down.

End: Display ED.

The buzzer makes a sound means the total sterilization processes have been finished, then should wait for the pressure down to "0" bar at the steam manometer on command front panel.

0.0
87
ED

CAUTION DO NOT PUT OR COVER ANY STUFF ON THE MACHINE TO KEEP HEAT VENTING WELL.

6.8 End of the Sterilization Cycle

When working cycle finished, the "ED" will illuminate and give you a sound of alerting. Then you can open the door and take the sterilized instruments out.

WARNING DO NOT TRY TO OPEN THE DOOR IF THE PRESSURE DOES NOT SHOW "0 BAR".

When the door of sterilizer opened, the program will return to the initial state, heat-preserving and waiting for next sterilizing cycle, before start a new program it will be kept in a heat-preserving condition all the while.

CAUTION AFTER STERILIZING HAS BEEN FINISHED, PLEASE USE THE MATCHED TONG TO TAKE THE TRAYS OUT FROM STERILIZING CHAMBER. IT WILL BE BETTER TO STORE STERILIZED INSTRUMENT AFTER THEM HAVE BEEN COOLED DOWN TOTALLY.

6.9 Power Off

If you finished the sterilization, please turn off the power switch. The power switch light will be off, and close the door but do not lock it.

If do not use it for a long time or for storage, please unplug the power cord.

ATTENTION DURING THE STERILIZING, WE SUGGEST THAT YOU USE THE INDICATOR TAPE. PUT THEM IN THE CHAMBER IN ORDER TO ENSURE RELIABILITY OF STERILIZATION.

6.10 Forced Exit

In the cycle, if program is interrupted by error or pressing "Start/Stop" button more than 3 seconds it will show "EE" on the state window as following:

1.0
112
EE

In this state the Air release solenoid valve will open and exhaust pressure. You can cancel alarm by pressing "Start/Stop" button.

WARNING DO NOT TRY TO OPEN THE DOOR IF THE PRESSURE DOES NOT SHOW "0 BAR".

Chapter 7 Essential Information

Please ensure the sterilizer operated correctly. It is very important to follow below points and carry out the necessary maintenance procedures as specified.

7.1 Please Ensure the Following....

- ❖ You have read and follow these operating instructions.
- ❖ The load is suitable for sterilizing in the cycle selected.
- ❖ The load can be sterilized at the selected temperature.
- ❖ The load has been rinsed thoroughly in clean water before sterilization to avoid any chemical residues.
- ❖ When placing instruments on trays, ensure that they are placed on the ribs of the tray (to help drainage), they must not touch each other and must not interfere with other trays or the chamber above.
- ❖ Only distilled water can be used.
- ❖ The sterilizer should be set in a ventilated area.
- ❖ The sterilizer is not installed in an enclosed cupboard space.
- ❖ Keep the door ajar if not in use.
- ❖ Only qualified personnel could do the service of sterilizer.
- ❖ Reserve the package for transportation
- ❖ If the place which you use the machine is over 500m height, it should be set before use. You can contact with local dealer for the detail.

7.2 And Please Do Not....

- ❖ Lose this User's manual.
- ❖ Add any chemicals or whatsoever analogous water to the sterilizer.
- ❖ Attempt to sterilize volatile substances, toxic materials or other unsuitable loads.
- ❖ Place the sterilizer in direct sunlight.
- ❖ Place the sterilizer on heat sensitive surfaces.
- ❖ Use inappropriate cleaning materials.
- ❖ Drop or abuse the sterilizer.
- ❖ Use in areas of risk associated with flammable materials or gases.

Chapter 8 Maintenance

Service is essential to effective sterilization and continued running.

We suggest general servicing by an approved technician per 2-year, or 2500 cycles. Every 3 months replacing the bacteriological filter, every year replacing the door seal.

8.1 Maintenance Schedule Chart

Maintenance Required	Person Responsible
Daily	
Clean Door Gasket	User
Clean Chamber	User
Weekly	
Clean Chamber, Trays and Rack	User
Clean Water Draining Filter	User
Monthly	
Clean Reservoir	User
Yearly	
Performance Verification and maintenance	Qualified service personnel
As Required	
Change Door Gasket	User
Cleaning function	User

8.2 Daily Maintenance

Clean Door Gasket

The door gasket and the mating surface should be wiped off clean each day with a clean, damp cloth. Do not use abrasive cleaners on the gasket or mating surface.

Use warm soapy water for keeping marks of sterilizer persistent, but ensure any soap residues are completely removed by wiping both the gasket and the vessel again with water using a lint free damp cloth.

WARNING Refer to qualified personnel for servicing. **Never use a wire brush, steel wool, abrasive material, or chloride-containing products to clean door and chamber assembly. "Caution hot surface. Avoid contact."** ensure that the sterilizer is cooled down fully before cleaning to avoid burns.

Clean After Liquid Loads

Biological media tends to boil at a higher rate than other liquids during venting. This causes media to be spattered inside the chamber. Therefore, the chamber must be cleaned daily when you are sterilizing media. Cleaning as follows:

- ❖ Allow unit to be cooled down.
- ❖ Wipe out chamber and door with a clean, damp cloth.

WARNING Failure to keep the interior of the stainless steel chamber free of mineral deposits and debris can cause premature failure of the sterilizer.

8.3 Weekly Maintenance (More Often If Necessary)

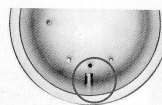
Clean Chamber, Trays and Rack

At least once a week, the trays and tray rack should be removed from the sterilizer chamber. The trays, tray rack and chamber should be thoroughly cleaned to remove any deposits from the surfaces.

Clean the trays, rack and chamber (especially the bottom of the chamber) with appropriate antibiological cleaners. Wipe all residues from the surfaces with a dampened, lint-free cloth.

WARNING To prevent from collection of mineral deposits and corrosion of chamber components, use distilled or deionized water only as specified. Clean chamber after each use if sterilizing saline solutions.

Clean water filter (pic 8-1)



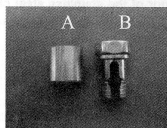
pic 8-1

Water draining filter might has been jammed by some dust because of use for a long-term, so effect of vacuum and drying would be influenced. Some tiny impurity might be deposited on the filter after a long-term use, blocking the filter, so as to influence the effect of the vacuuming and water discharging. The kinds of impurity come from smeary dust on the instruments being sterilized or some calcification in the water.

Keep cleaning of the inside chamber in order to make life-time of filter much longer; please

take the following advice for consideration:

- ❖ Use eligible distilled water;
- ❖ The instruments should be cleaned before placing in; it is good to use specified packing for the instruments with oil or other impurity, don't forget to seal up.
- ❖ Rotate the water filter which composed by filter net tube(A) and filter holder(B) inside the chamber. Cleaning the part A and B, ensure that there is no any dirty thing on it.(We suggest you to clean by ultrasonic cleaning machine). Then set it back and rotate to the hold bottom of the chamber.



(pic 8-2)

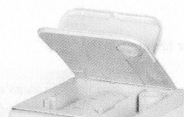
8.4 Monthly Maintenance

Clean Water Tank

There are some impurities and some toxins had been left behind in the reservoir because distilled water stored for a long time, so you need to drain and clean regularly. According to the picture which shows below, loose the screw by screw-driver, and open the cover to clean inside. As **pic 8-3** shows



(pic 8-3)



ATTENTION BE SURE THAT USE DISTILLED WATER PROPERLY IN ORDER TO EXTEND THE STERILIZER LIFE-TIME.
DO NOT RAVE ABOUT THE STERILIZER WHEN THE TANK HAS BEEN FILLED.

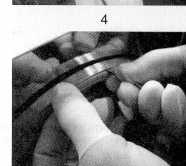
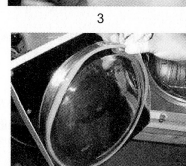
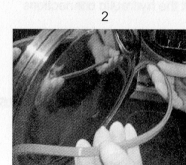
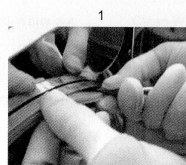
8.5 Other Maintenance

Chang Door Gasket

Tool: a plain screw driver without sharp head is needed.

Disconnect the sterilizer from the power supply. Ensure that the sterilizer is cool and depressurized.

- 1) Hold verge of the seal by one hand softly, and another hand should be inserted the screwdriver into the gap between gasket and door, take out the seal slowly.
- 2) Once you take out one part of the seal, you can draw out the whole seal slowly. After taking out the seal, please check and clean the groove of gasket, so does the gasket, please replace the gasket if there is some damage.
- 3) Fix the clean gasket in initial door groove. Attention: the gasket should be imbedded in the groove equably. At first, please imbed the 4 spots equably into groove when fix the gasket, and then embed the other parts. After that, press the gasket equably by hand.
- 4) Attention: the inner edge of gasket may be ectropium during embedding it in the door groove, at this time; you'd better to tight it back to the groove by using the screwdriver carefully.



8.6 Servicing By the Approved Technician

Service is essential to effective sterilization and continued running.

We suggest general servicing by an approved technician per 2-year, or 2500 cycles. Every 3 months replacing the bacteriological filter, every year replacing the door seal.

Check-list based on general servicing:

- 1 Check the solenoid valves
- 2 Check the water pump
- 3 Check the vacuum pump
- 4 Check the distilled water drain valve and the used water drain valve
- 5 Check the safety valve
- 6 Check the door-locking system
- 7 Check the sensor of pressure and temperature
- 8 Check the water level sensor
- 9 Check the electrical connections
- 10 Check the hydraulic connections
- 11 Check the safety thermostat
- 12 Clean the sterilization chamber
- 13 Clean the trays and the tray holder
- 14 Clean the reservoirs
- 15 Replace the water filter
- 16 Replace the air filter
- 17 Replace the door gasket

Statement: Under recommended operating conditions and maintenance, calibration is not required

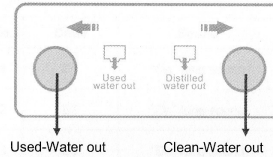
Chapter 9 Transportation and Storage

9.1 Preparation before Transportation and Storage

Shut off the power switch, unplug the cord, and make the sterilizer been cooled down completely.

9.2 Draining

Drain water from reservoir and the condensate collector completely; insert the joint end of the attached tube to drain connection. (The spout on the left is the water spout used for the "used-water out", the one on the right is used for the "clean-water" drain spout)



9.3 Conditions for Transportation and Storage

Temperature: -5 °C ~ +55 °C

Relative Humidity: ≤85%

Atmospheric pressure: 500HPa~1060HPa

9.4 Package

Package is used in transportation for protecting product, conveniently delivery and sales.

The sterilizer package requirement should as followed:

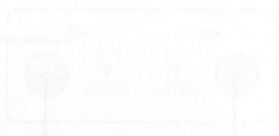
- 1) Product can not over 3/4 volume of package
- 2) Product should be fix inside the package
- 3) Package bag should be higher than product 6mm

Appendix 1 Articles Preparation Procedure

The articles should be treated as followed process:

1. Clean the articles, keep them dry
2. Pack the articles into sterilization roll(if need)
3. Place articles into sterilizer
4. Run selected sterilization program
5. Take out and store

CAUTION MAKE SURE THE PACKING OF INSTRUMENTS IN GOOD CONDITION.
THE STERILIZED INSTRUMENTS STILL EXIST LOTS OF WARMTH. DO
NOT FOLD IN ORDER TO EXHAUST THE RESIDUAL STEAM.



Appendix 2 Alarm Code

The sterilizer will show Error information when problems happen.

Example

1.0
112
E1

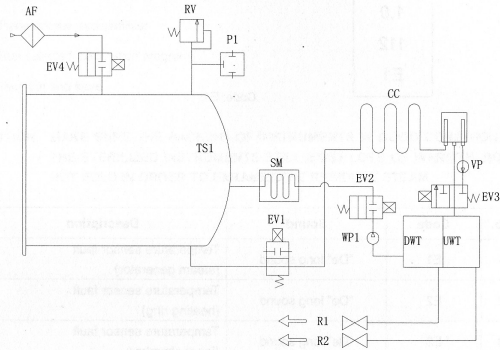
Code: E1

Code List

No.	Code	Sound	Description
1	E1	"De" long sound	Temperature sensor fault (steam generator)
2	E2	"De" long sound	Temperature sensor fault (heating ring)
3	E3	"De" long sound	Temperature sensor fault (inner chamber)
4	E4	"De" long sound	Sterilization fail
5	E5	"De" long sound	Pressure not exhausted
6	E6	"De" long sound	Door open in the cycle
7	E7	"De" long sound	Operation over time
8	E8	"De" long sound	Over pressure
9	EE	"De" long sound	Forced Exit
10	EF	"De" long sound	Hardware need calibrate

Appendix 3 Piping and Circuit Diagram

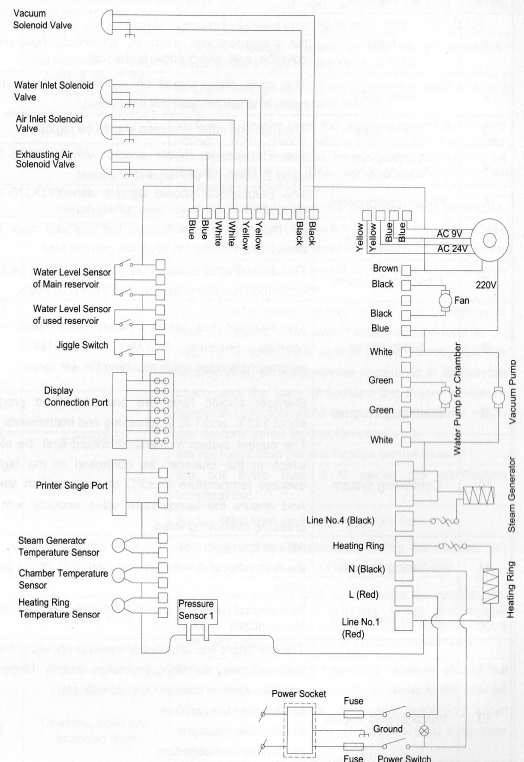
Piping Diagram



AF	Air Filter
UMT	The Used Water Tank
DWT	The Distilled Water Tank
EV1	Air Release Valve
EV2	Water Supply Valve
EV3	Vacuum Valve
EV4	Air Return Valve
P1	Pressure sensor

SM	Steam Maker
WP1	Add Water Pump
VP	Vacuum Pump
CC	Condensate Collector
RV	Relief Valve
R1	Distilled Water Drain Valve
R2	Used Water Drain Port
Ts1	Temperature Sensor

Circuit Diagram



Appendix 4 Inspection Checklist

NO.	Testing item	Request of standards
1	Exterior	The exterior of sterilizer should be tidy and mustn't have the disfigurements, such as deflection, hollowness, collision, nick, sharp edge, and so on.
2	Cover plate	The cover plate should be assured to disassemble easily in order to repair the equipment.
3	Cover plate	The digit and letter in screen should be legible.
4	Electroplate components	The Electroplate should accord with YY0076-1992 class 2, which for the request of aspect.
5	Printer components	The Electroplate should accord with YY0076-1992 class 2, which for the request of aspect.
6	Door safe lock	On the normal condition, if the sterilizer door hasn't been locked tightly, the program can not start.
7	Chamber Pressure	The door should ensure that the door can't be opened when the chamber pressure over than 0.027Mpa.
8	Safety Valve	The sterilizer must install a safety valve, safety valve opening pressure $0.27\text{Mpa} \pm 0.01\text{Mpa}$, and automatically open when reaching the set value.
9	Sterilizing Program	Sterilizer should have the pre-established program about 121°C and 135°C dressing and instruments.
10	Controlling system	The control system in sterilizer should limit the steam which in the chamber be controlled at the highest average temperature in $\pm 3^{\circ}\text{C}$ of pre-establish station. And ensure the temperature value accords with the pressure controlling value.
11	Timing control	Able to timing control of the sterilization and drying, and the error should not be greater than 10% of the preset value.
12	Button and Switch	Buttons and switches should be flexible and reliable on the sterilizer.
13	Indicator and display	The indicators and displays of sterilizer should show the states of every sterilizing procedure exactly. Under the normal situation, sterilizer should indicate: a) Chamber temperature b) Chamber pressure c) Sterilizer working state d) Water level state e) State of door
14	Leakage forbidden	In the condition of the vacuum - 0.07 Mpa, the sterilizer shouldn't leak 0.03Mpa within ten min.

15	Leakage forbidden	The sterilizer can't leak under the work pressure
16	protective earthing impedance	The impedance between protective earthing point of the power input faucet and protective earthing can be touched all metallic parts, doesn't over than 0.1Ω .
17	Successional leakage current under the work temperature	a) Earth leakage current on the normal condition: $\leq 0.5\text{mA}$ the single blooey state: $\leq 1\text{mA}$ b) Crust leakage current on the normal condition: $\leq 0.5\text{mA}$ the single blooey state: $\leq 0.5\text{mA}$
18	Dielectric strength with Working Temperature	a) A-a1: It should bear the sine wave test alternative voltage, 50Hz, 1500v, which between the web power input port and protective earthing can be touched all metallic parts. It lasts 1min, and hasn't the phenomenon of breakage and flash over. b) A-a2: It should bear the sine wave test alternative voltage, 50Hz, 1500v, which between the web power input port and the enclosure of which isn't be pretend earthing. It lasts 1 min, and hasn't the phenomenon of breakage and flash over.
19	Empty load	For all loads except hollow load A, the presence of saturated steam in the usable space and the load is deemed to have been achieved when, throughout the holding time, all temperatures measured in the usable space and the load: (Attention: the theory of steam temperature is accounted by measuring pressure, which can be considered the test temperature.) are not lower than the sterilization temperature; are not more than 4 K above the sterilization temperature; do not differ from each other by more than 2 K; The usable place temperature during the no-load can not over than the scope of highest temperature.
20	Hollow load	For hollow load A and B, in order to confirm the presence or absence of saturated steam, discriminate whether the indication system change in accordance with the system manufacturer predetermined color.
21	Dryness, solid and wrapped load	For wrapped load, any remaining moisture should not lead to wet packages and shall not result in detrimental effects on the sterilizer load. Any remaining water droplets on the inner side of pouch should evaporate within 5 min. For solid load the moisture content should not exceed 0.2%.