Class B Steam Sterilizer

Third Generation System, s/n starting with A

Distributed by

FLIGHT DENTAL SYSTEMS

Instruction Manual

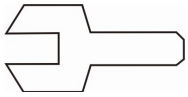
STE-23-D

Thank you for choosing our steam sterilizer.

Prior to operating this instrument, please read the instruction manual carefully and follow all installation instructions.

IMPORTANT NOTICE
If you can't open the door, please unlock the door according to the instructions "How to open the door in case of power outage" in the manual.

Needs maintenance



If this picture appears on the screen when powered on or E88 appears on the report, please call your dealer or local maintenance service. Your steam sterilizer needs general maintenance. This occurs after every 1000 cycles.

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Document: Version 01D0000 V2.0
Subject to technical changes

Save these instructions

Contents

1 General

Scope of Manual

This manual contains information concerning the installation, operation and maintenance of the steam sterilizer. To ensure proper performance of the sterilizer, the instructions given in this manual should be thoroughly understood and followed.
Keep the manual near the sterilizer in an accessible location for future reference.

Intended Use

The steam sterilizer described in this manual is intended for the sterilization in all medical, dental, beauty, vet and tattoo fields of the following types of instrument loads: solid, porous, hollow loads type A and hollow loads type B, un-wrapped, single wrapped and double wrapped, and liquid, that are compatible with steam sterilization.

General Safety Instructions

- Read and understand this manual before attempting to install or operate the sterilizer.
- Make sure that all the installation conditions are fully complied with.
- Ensure that the voltage agrees with the supply voltage specified on the rating plate of the sterilizer.
- This appliance must be grounded. Connect only to a properly grounded outlet.
- Do not cover or block any openings on this appliance.
- Use this appliance only for its intended use as described in this manual.
- Do not exceed the maximum weight limit of the loads specified in this manual.
- Do not operate this appliance if it has a damaged cord or plug or if it is not working properly or if it has been damaged or dropped.
- Never put flammables or explosive products into the sterilizer.
- The sterilizer may not be operated in areas in which gas or any other explosive or volatile substance is present.
- Installation and repair work should only be performed by authorized service technicians. Work by unqualified persons could be dangerous and may void the warranty.

Standards and directives

The steam sterilizers were designed and produced in conformity with the following directives and standards:

Directives:

97/23/CE Pressure equipment.
93/42/EEC Medical devices (class II b).

Standards:

EN 13060 Relative to small steam sterilizers.
EN 61010-1 Safety regulations for laboratory devices - Part 1: General regulations.
EN 61010-2-040 Safety regulations specific to sterilizers used in the processing of medical material.
EN 61326-1 Electromagnetic compatibility regulations for laboratory devices.

Symbols

For safe operation, please pay close attention to the alert symbols below which can be found on the sterilizer and throughout this manual.

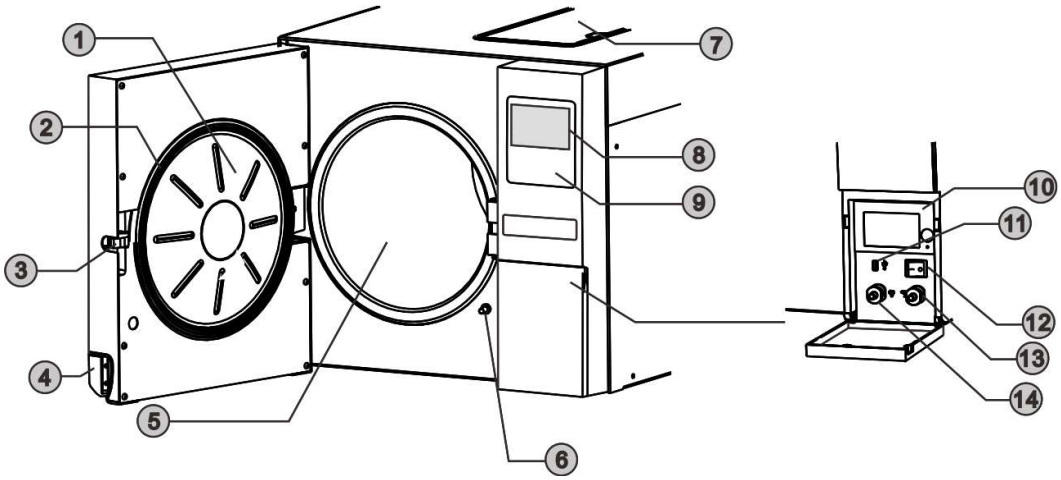
Important information (Caution)

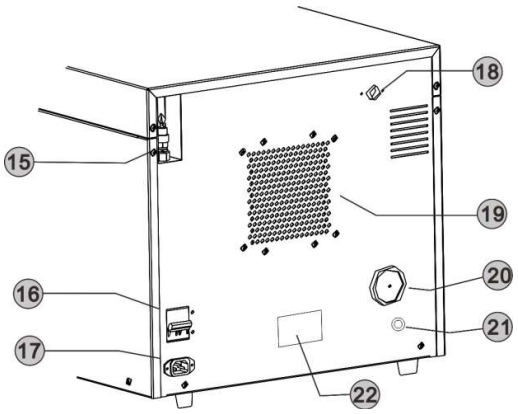
Hot surface

Ground connection

2 Description of the sterilizer

Sterilizer views



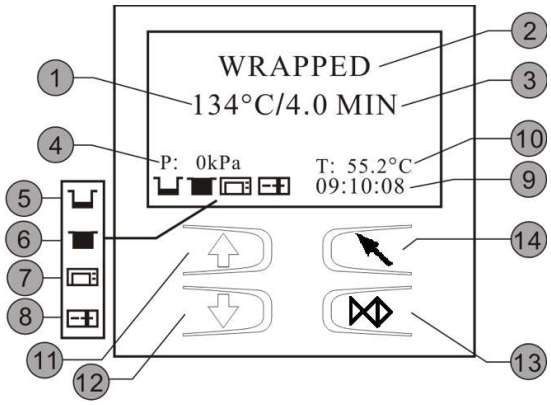


	Date of manufacture
SN	Manufacture number
	Manufacturer Name
	Manufacturer Address
EC REP	EC-Representative Name
	EC-Representative Address

1. Door	9.Control panel	16. Circuit breaker
2. Door seal ring	10. Printer	17. Power socket
3. Door lock	11. USB port	18. Used water tank vent
4. Door handle	12. Main switch	19. Condenser vent
5. Chamber	13. Distilled water outlet/ Distilled water inlet*	20. Bacteriological filter
6. Door switch		21. Distilled water drain*
7. Distilled water tank	14. Used water tank outlet	22. Rating plate
8. LCD	15. Safety valve	

*Models equipped with external water filling function.

Control panel

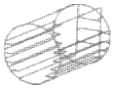


1	Program temperature
2	Program
3	Holding time
4	Pressure
5	Distilled water / Fill it flashing.
	Filling the tank
	Bad water quality
6	Used water tank full / Drain if flashing
7	Printer status
8	Door open
	Door closed
	Door blocked
9	Time
10	Current internal temperature
11	Up button
12	Down button
13	Enter button
14	Menu button

Technical Specifications

Model	Clave B
Chamber (m, diameter/depth)(inches)	φ247 x 450(9.724" x 17.716")
Overall dimensions (mm,W*H*D)	490 x 455 x 690
Net Weight (kg)	53
Nominal power (VA)	2000
Electrical supply	220-230V;50/60 Hz;10A
Sterilization temperatures	121°C/134°C
Capacity of the distilled water tank	2.5 L (Water at level Max.) Approx.
	0.5 L (Water at level Min.) Approx.
Circuit breaker	F16A /400 V
Operation temperature	5°C ~ 40°C
Operation relative humidity	Max. 80%, non-condensing
Max. Noise level	<70 dB
Atmospheric pressure	76 kPa ~ 106 kPa

Packing content

Item	Accessories		Quantity
1	Instrument tray		4
2	Instrument tray rack		1
3	Draining hose		2
4	Door Seal		1
5	Tray handle		1
6	Door adjustment Wrench		1
7	Instruction Manual		1

3 Installation

General conditions

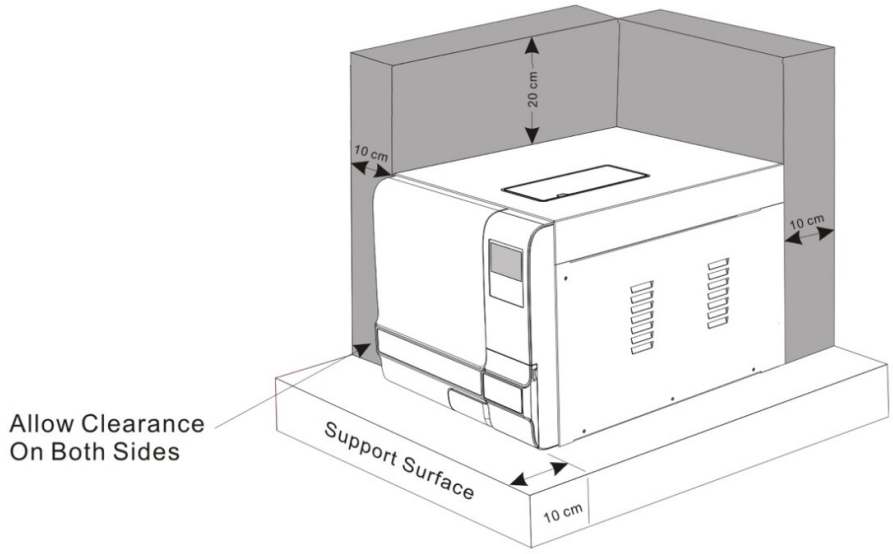
- Position the device on a solid surface with a minimum weight capacity of 60 kgs.
- The sterilizer should be placed on a level worktable.
- Leave at least 10 cm between the device rear part and the wall. The clearance required to open the door is 40 cm.
- Position the sterilizer at such a height as to make it possible for the operator to check the whole sterilization chamber and carry out the normal cleaning operations.
- The room where the device is installed must be sufficiently ventilated.
- Do not install the device near washing basins, taps, etc. where it is likely to be splashed.
- Do not lean on the door when it is opened.
- Do not place trays, papers, fluid containers or other objects on the sterilizer.

Power supply connection

Check the label on the back panel of sterilizer to verify the voltage rating for the unit. Failure to connect the sterilizer to an appropriate power supply could result in damage to the unit and electrical shock to personnel.
Plug the power cord into a properly polarized and grounded receptacle rated for the correct voltage and current. A dedicated circuit that is only used for the sterilizer is recommended. Never connect the device plug to adapters of any type.

Location requirements and dimensions (mm)

To ensure proper air circulation, and to allow access to the reservoir fill port and drain coupling, adhere to the minimum clearance requirements listed below.



4 Setup

Connect the power cord to an outlet of the appropriate voltage. Open the door to remove all of the inner contents for unpacking. Turn on the main power switch on the right side. After switching on, the machine turns on the LCD and shows the door position, water level, working program, date, time, etc.

Fill the distilled water tank

Manual water filling

When the level of distilled water reaches a minimum level, the distilled water tank icon will flash and beep three times.
Press the button on the tank lid and open it to the maximum position. Fill it carefully with distilled water. If the water level exceeds the maximum level, an alarm will sound, and the distilled water tank icon will blink.

Drain the used water tank

Attach the drain hose on the drain port connector located inside the service door, on the left.
Attention: The capacity of the used water tank is approximately 1.5 liters.

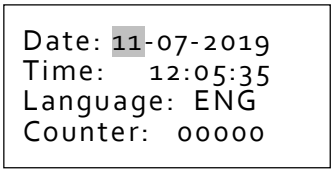
Preparation of materials for sterilization

For the most effective sterilization and to preserve the sample, please follow below:

- Clean instruments immediately after use.
- Clean the instruments with an ultrasonic cleaner.
- Residual chemicals left over after the cleaning and disinfecting process may damage and corrode parts of the sterilizer. Always rinse off the instruments using distilled water.
- Follow instrument manufacturer's guidelines and recommendations for handling and cleaning instruments prior to sterilization.
- Check the manufacturer's instructions as to proper procedure for sterilizing each item.
- Arrange the samples of different materials on different trays or with at least 3cm of space between them.
- Clean and dry instruments thoroughly before placing them into a tray.
- Always insert a sterilization paper or cloth between the tray and sample to avoid direct contact.
- Arrange the containers (glasses, cups, test-tubes, etc.) on one side or inverted position, avoiding possible water pooling.
- Don't stack the trays one above the other or put them in direct contact with the walls of the sterilization chamber.
- Always use the instrument tray handle.
- Wrap the samples one by one or, if more tools have to be put in the same bag, verify that these are made of the same material.
- Don't use metallic clips, pins or similar items, as this jeopardizes the maintenance of the sterilizer.
- Don't overload the trays over the stated limit (see appendix 2).

Basic Set

From the main menu, select "Basic Set".



The “Basic Set” menu permits to set the following options:
*Date *Time *Language
Select the “Basic Set” from the main menu by pressing ↖ button.
Select the item by pressing ↖ button. The unit you selected will be highlighted.
Adjust the value by pressing ↑↓ buttons. Press ↖ button to select the next item.
Press ⋈ button to save and exit.

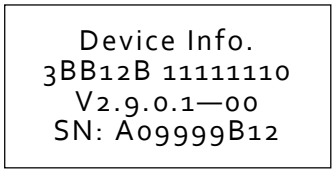
Abbreviation of language options

CHN	Chinese	ENG	English	DEU	German	ESP	Spanish
PL	Polish	FR	French	HUN	Hungary	ROM	Romanian
NL	Dutch	LTU	Lithuanian	LAT	Latvian	CZE	Czech
ITA	Italian	RUS	Russian	PT	Portuguese	HR	Croatian

Note: The Counter (cycle number) cannot be changed by the operator.

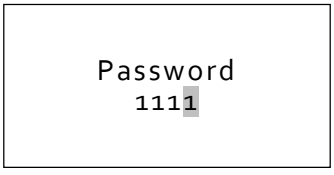
About device

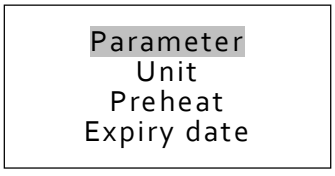
Select “About device” from the main menu then press ↖ button.
Press ⋈ button to exit.

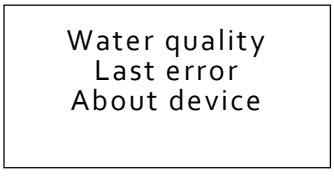


Advance Set

The “Setup” menu permits setting the following options:
*Parameter *Unit *Preheat *Expiry date (labels) *Water quality (sensor) (optional)
and seeing the information of the: *Last error
Select “Setup” from the main menu by pressing ↖ button.
Input the password digit to digit by pressing ↑↓ and ↖ button to go next.
Password: **1111**



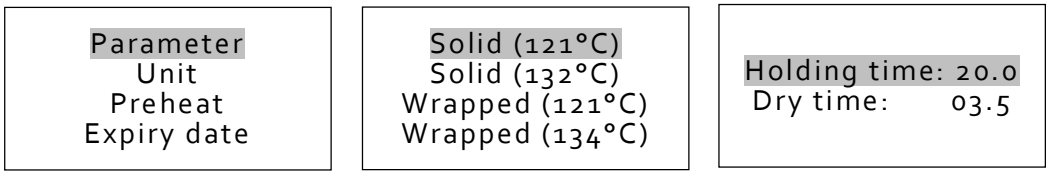




Parameter

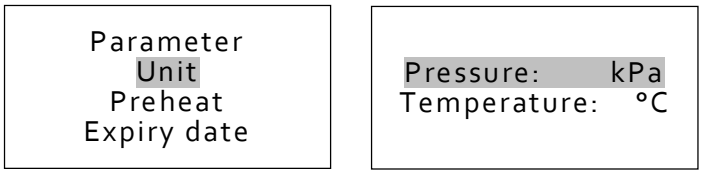
The “Parameter” menu permits setting the following options:
*Holding time *Dry time

Select “Parameter” from the menu by pressing ↖button.
Select the program by pressing ⬆⬇ then press ↖ button.
Select the parameter by pressing ↖ button. Adjust it by pressing ⬆⬇.
Press ⋈ button to save and exit.



Unit

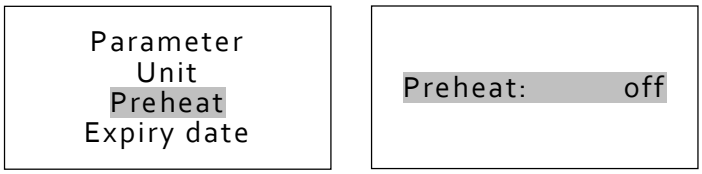
Select “Unit” from the menu by pressing ↖button.
Select the parameter by pressing ↖ button. Adjust it by pressing ⬆⬇.
Press ⋈ button to save and exit.



Preheat

When this mode is activated, the chamber and steam generator start to warm until it reaches the minimum temperature to begin a sterilization cycle. This helps to reduce the total cycle time and improve the drying efficiency. The “Preheat” mode will be deactivated after one hour of inactivity.

Select “Preheat” from the menu by pressing ↖ button.
Adjust it by pressing ⬆⬇.
Press ⋈ button to save and exit.



Expiry date (Optional)

To modify the expiration date of the labels, select "Expiry date" from the menu by pressing button.
Adjust it by pressing .
Press button to save and exit.

Parameter Unit Preheat Expiry date	Month: 03

Water Quality (optional)

If your sterilizer is equipped with a water quality sensor and you want to deactivate it, select "Water quality" from the menu by pressing button.
Adjust it by pressing .
Press button to save and exit.

Unit Preheat Expiry date Water quality	W. quality: OFF

Last Error

In order to help the technical assistance process, the most relevant information corresponding to the last error can be displayed on the screen.

Select "Last error" from the menu by pressing button.
Press button to exit.

Preheat Expiry date Water quality Last Error	Last error: E20 13-07-2019 17:00 PC:01 ST:00 CN:00042 Pressure: 100kPa T1:070.8°C T3:040.0°C T2:033.7°C T4:244.0°C

5 Operation

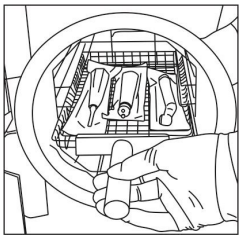
Prerequisites

Switch On.
Check the status of the icons in the screen, . (Refer to point 2. Description of the sterilizer)

Initialize... P: 07kPa T: 28.1°	Wrapped 134°C/3.5 Min 16-07-2019 P: 0.0kPa T:28.2°C 0:45:05

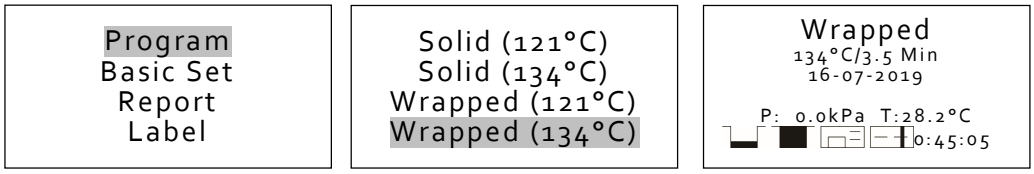
Load

Open the door then placed the trays inside the chamber by the tray handle. After the instruments are loaded, you may close the door.



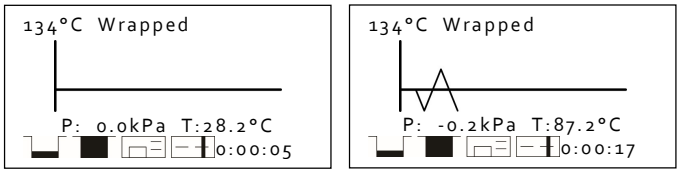
Select the program

Enter to the main menu by pressing ↖ button, Select “Program”. Select the program by pressing ⇅ then press ↖ to confirm program, in the screen will appear the information of selected program as the temperature and sterilization time (holding time), also the date, time, current pressure and current temperature.



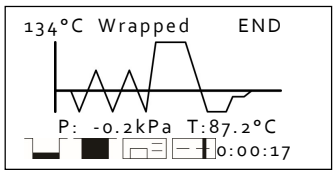
Start the sterilization program

Press ⋈ to start the cycle. The stage, conditions and the status of the cycle will appear on the display. The sterilizers will perform the program automatically. (see appendix 2).



End of the cycle

Once the cycle is completed, “End” will appear at the end of the graphic. The printer will print out and the digital report is saved in the USB memory if these are connected.



Caution: Always use the tray handle to load or unload the tray into the sterilizer. Failure to do so can result in burns.

Manual interruption of the cycle

To interrupt a cycle prematurely, hold ⋈ for 3 seconds.
If the cycle is manually interrupted after it reaches the drying phase, the items inside the sterilizer may be considered sterile and considering that the cycle has been interrupted during the drying phase the materials and instruments inside the chamber may be wet.
Note: If the cycle is manually interrupted before it reaches the drying phase, the items inside the sterilizer must be considered **not sterile**. N20 will appear on the screen. (see Error code description).

Caution: Depending on the phase of the cycle, steam and water can escape from the sterilization chamber when you open the door.

Test Programs

Helix test

Put the Helix test device into the chamber, then, close the door.
Select “Program” from the main menu by pressing ⇅ then ↖ to enter in the menu. Select “Helix test”. The screen will show the information for temperature and sterilization time (holding time), also the date, time, current pressure and current temperature.

Press ⋈ to start the cycle. The stage, conditions and the status of the cycle will appear on the display. The sterilizer will run the program automatically. (see appendix 2).

After finishing the cycle, you may check the indicator and evaluate the result according to the instructions from the test manufacturer.

B&D Test

Put the B&D test package into the chamber, then close the door.
Select “Program” from the main menu by pressing ⇅ then ↖ to enter in the menu. Select B&D test. The screen will show the information for the temperature and sterilization time (holding time), also the date, time, current pressure and current temperature.

Press ⋈ to start the cycle. The stage, conditions and the status of the cycle will appear on the display. The sterilizer will run the program automatically. (see appendix 2).

After the cycle is finished, you may check the indicator and evaluate the result according to the instructions from the test manufacturer.

Vacuum Test

Select “Program” from the main menu by pressing ⇅ then ↖ to enter the menu. Select “Vacuum test”.

After closing the door, press ⋈ to start the cycle. The stage, conditions and the status of the cycle will appear on the display. The sterilizer will run the program automatically. (see appendix 2).

In compliance with EN 13060, the test requires that the air leakage rate be less than or equal to 0.13 kPa/min. during 10 minutes. If the leakage rate is not greater 0.13, it will show Success.

If the temperature difference between the maximum temperature and the minimum is more than 3°C, it will show void. That means the result of the test is a fail. You will need to run the vacuum test again after the chamber has cooled down.

Data

The internal memory will store the information of the last 9999 cycles.

USB Flash memory (Optional)

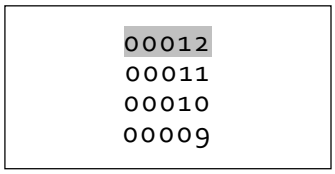
A USB drive can be used as a method of storing a report of the cycle. To do so, insert the USB drive into the slot located on the service door of the sterilizer.
The information will automatically output directly to the USB drive after the cycle has completed. The name of the file is determined by the serial number of the machine and the cycle number.
For example:
The serial number is E00001. The cycle number is 0012.
The file name in the USB stick is 01001200.txt.
The first two numbers represent machine number.
The middle four numbers represent cycle number.
The last two numbers represent error code.
E.g. 00:no error; 01: error E01

Printer (Optional)

If installed, you can see the icon in the screen stop flashing.
At the end of each cycle the printer will print out a report of the cycle.
Note: If there is no paper inside the printer, the icon will flash.

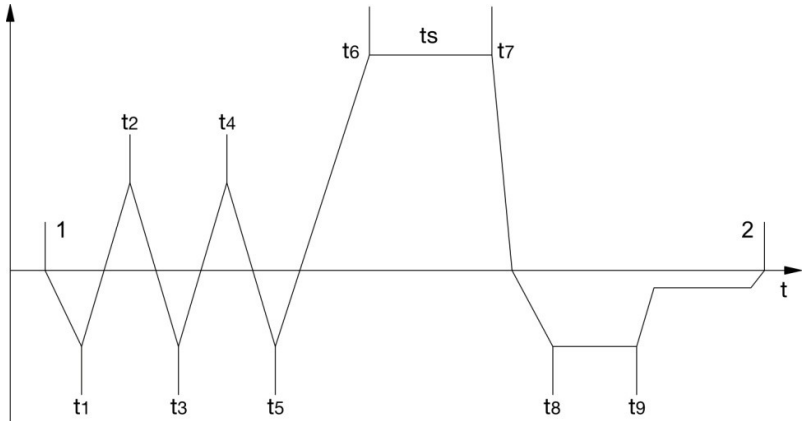
Report

Internal Memory
In this menu you can get the information of all the cycles stored in the internal memory of the sterilizer.
Select “Report” from the main menu and press ↖ button, you will see the list of records.
Select the record by pressing ⬆⬇ button.
Press ↖ button to print and save the report.
Press ⋈ button to exit.



Sample of a printer report

When reading the printed data records, refer to the diagram below:

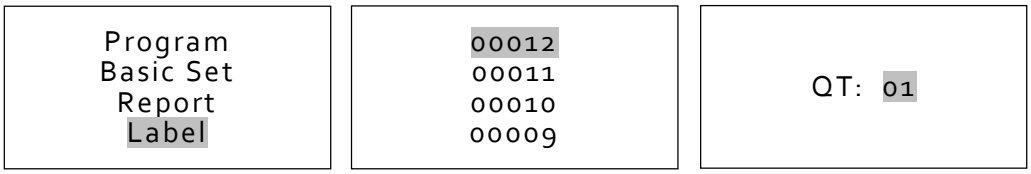



```
================================
Program:     WRAPPED
Temperature: 134C
Pressure: 206.0 kPa
Drying Time: 08Min
Holding Time: 4.0Min
--------------------------------
      Time     Temp.   Pressure
Start  12:28:17 089.0C
T1:    12:31:32 087.1C -075.0kPa
T2:    12:33:43 110.2C 052.0kPa
T3:    12:36:37 088.9C-075.0kPa
T4:    12:39:20 114.7C 053.7kPa
T5:    12:43:37 087.9C-075.0kPa
T6:    12:50:40 134.8C 206.0kPa
TS:           134.7C 209.5kPa
Max. Temperature:135.2C
Min. Temperature:134.3C
Max. Pressure:214.0kPa
Min. Pressure:204.9kPa
T7:    12:54:39 134.4C211.4kPa
T8:    12:57:36 102.1C -060.0kPa
T9:    12:59:54 098.2C-060.0kPa
End    13:04:07 102.4C
--------------------------------
Cycle No.: 00017
Ster. Value: Success
Date: 2017-06-07
SN:E54723
Operator:
v 2B00V2.5
================================
```

```
========================
Program:Vacuum test
Tp:1℃
P1:-75.0kPa
P2:-74.0kPa
rate of pressure rise:0.10
Start Time:08:22
End Time:09:01
Date:2017-07-19
Test Value:Success
SN:E00001
Operator:
========================
```

Print labels

Select “Label” from the main menu and press ↖ button to enter the menu.
Select the cycle number by pressing ↖ button. Choose the labels quantity by pressing ↑↓ then press ↖ button to print.
Press ⋈ button to exit.



6 Maintenance

To ensure proper operation and maximum steam sterilizer life, carefully follow all recommendations for periodic maintenance. One of the most important steps you can take to prevent problems with your sterilizer is to use only distilled water.

Frequency	Number of cycles	Maintenance operation
Daily		Clean the external surface
		Drain used water tank
		Clean the door seal
Weekly	25	Clean the chamber, trays and rack
		Clean distilled water tank (drain tank)
Monthly	100	Clean the filter inside the chamber and in the distilled water tank
Every 6 months	500	Replace the bacteriological filter
Every year	1000	Replace door seal, tubing, filters, check valves

Clean the distilled water tank

Unplug the power cable, or drop the circuit breaker at the back of the unit.
Drain the tank completely using the drain connector at the front of the sterilizer and leave it connected to a tube in an open position.
Clean the internal surface with a soft sponge and a small soft brush for the areas difficult to reach using distilled water.
Remove the filter and clean it with a small soft brush and mild soap, rinse it with distilled water, and put it back in to the position.

Replacement of the bacteriological filter.

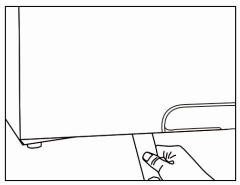
The bacteriological filter is in the back of the sterilizer. Unscrew the filter by hand counter-clockwise.
Place the new bacteriological filter. Screw the new filter by hand clockwise.
Note: Do not operate sterilizer without filters in place.

Clean chamber, door seal ring, trays, and tray rack.

Remove the trays and tray rack from the chamber. Clean the trays, rack and the inside of the chamber with mild soap.
Rinse the trays, rack and inside of the chamber with a smooth cloth and distilled water.
Examine door seal for possible damage. Clean door seal and mating surfaces with a damp cloth.
Note: Do not use bleaching agents or any abrasive materials or substances in the chamber. Failure to comply may cause damage to the chamber and/or other components.

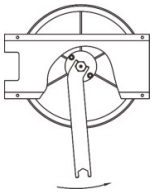
Caution: To prevent burns, let the unit cool before cleaning gaskets and touching the surface.

Door adjustment



Under normal circumstances, the chamber door does not require adjustments. However, if the seal fails (resulting in steam leaking from the front of the chamber), you may need to adjust it.

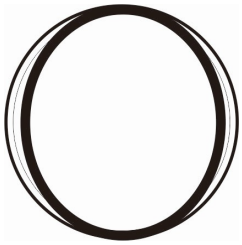
Open the door.
Insert the spanner tool in the gap beneath the plastic cover. Use the spanner to grip the adjusting nut. Turn the nut counter clockwise as the figure below. This will tighten the sealing plate. Turn the nut until the sealing plate is tight. If the door knob is too tight, you may also turn the nut clockwise to loosen it.



Caution: Never adjust the chamber door while the door is closed.

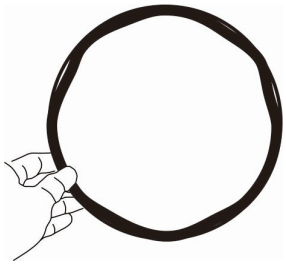
Replacement of the door seal ring

Open the chamber door. Remove the door seal ring carefully by hand.
Clean the door seal ring carefully with a smooth cloth with distilled water.
Moisten the new seal with distilled water.
Insert the new seal and tap in sequence as follows:



Press in the top and bottom of the door seal.

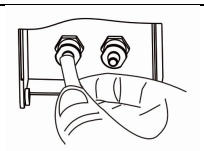
Press in the left and right sides of the door seal.



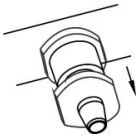
Press the remaining sections of the seal.

Caution: Please ensure the chamber and the door are cold prior to replacing the seal ring.

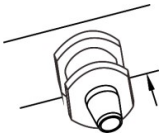
The drain valves



1. Press the included hose onto the drain valve firmly.



2. Pull the drain valve outward to drain the tank.



3. Push the drain valve back after draining the tank.

7 Troubleshooting

Code	Description	Proposed solution
E1	Steam generator temperature sensor error.	Power off & run a new cycle Contact your supplier if error persists.
E2	Inner temperature sensor error.	Power off & run a new cycle Contact your supplier if error persists.
E3	Temperature sensor of the chamber wall error.	Carefully ensure that the chamber wall is heated and contact your supplier.
E5	Fail to release the pressure.	Power off & run a new cycle Contact your supplier if error persists.
E6	Door lock problem during the cycle.	Make sure you had closed the door properly. Check the door switch.
E7	Error between temperature and pressure correlation.	Power off & run a new cycle Contact your supplier if error persists.
E8	Error between temperature and pressure correlation.	Power off & run a new cycle Contact your supplier if error persists.
E9	Failure to hold temperature.	Ensure the distilled tank isn't empty. Check the inner temperature sensor. Check somewhere for leaking.
E10	The door locking system doesn’t work.	The electromagnet locking system doesn’t work. The locking system switch doesn’t work.
E11	Failure to preheat the steam generator.	Power off & run a new cycle Contact your supplier if error persists.
E12	Failure to preheat the chamber.	Power off & run a new cycle Contact your supplier if error persists.
E13	Vacuum failed.	Power off & run a new cycle Contact your supplier if error persists.
E15	Inner temperature sensor error #2*	Power off & run a new cycle Contact your supplier if error persists.
E16	Pressure error	Replace the air filter Power off & run a new cycle Contact your supplier if error persists.
N20	Program manually interrupted	Reset the error from main screen.
E22	Vacuum test failure	Leaking somewhere. Check the door seal. Or contact your supplier if error persists.
N23	Result of vacuum test is void	The temperature of the chamber is high. Try again after the chamber has cooled down.
E24	It takes too long time to enter the next status.	Check for leaks. Or contact your supplier if error persists.
N27	The vacuum test fails.	Switch off. Then switch on after the chamber cools down and try again.
E28	The pressure is too high.	Power off and contact your supplier if error persists.
E30	Vacuum failed.	Power off & run a new cycle Contact your supplier if error persists.
E31	Inner temperature sensor error #2*	Power off & run a new cycle Contact your supplier if error persists.

8 Transportation and storage

Switch off the sterilizer before transportation or storage.
Pull out the plug. Let the machine cool down.
Drain the distilled water tank and the used water tank.

Conditions for transport and storage
Temperature: -20°C ~ +50°C
Relative humidity: ≤ 85%
Atmospheric pressure: 50kPa~ 106kPa.

9 Safety devices

1. Main breaker: Protection of the instrument against possible failures of the heating elements.
Action: Interruption of the electric power supply.

2. Thermal cutouts on the main transformer winding: protection against possible short circuit and main transformer primary winding overheating
Action: Temporary interruption of winding.

3. Safety valve: Protection against possible sterilization chamber over-pressure.
Action: Release of steam and restoration of the pressure to a safe level.

4. Safety micro-switch for the door status: Comparison for the correct closing position of the door.
Action: Signal of the wrong position of the door.

5. Thermostat on chamber heating elements: Protection for possible overheating of the chamber heating elements.
Action: Interruption of the power supply of the chamber elements.

6. Thermostat on steam generator heating elements: Protection for possible overheating of the steam generator heating elements.
Action: Interruption of the power supply of the steam generator elements.

7. Door safety lock: Protection against accidental opening of the door.
Action: Prevents the accidental opening of the door during the cycle.

8. Self-leveling hydraulic system: Hydraulic system for the natural pressure leveling in case of manual cycle interruption, alarm or blackout.
Action: Automatic restoration of the atmospheric pressure inside the chamber. (valve opens to release internal pressure)

Appendix 1

Water properties / Characteristics

Description	Feed water	Condensate
Evaporate residue	≤ 10mg/ I	≤ 1.0mg/kg
Silicon oxide sio2	≤ 1mg/ I	≤ 1.0mg/kg
Iron	≤ 0.2mg/ I	≤ 0.1mg/kg
Cadmium	≤ 0.005mg/ I	≤ 0.05mg/kg
Lead	≤ 0.05mg/ I	≤ 0.1mg/kg
Rest of heavy metals	≤ 0.1mg/ I	≤ 0.1mg/kg
Chloride	≤ 2mg/ I	≤ 0.1mg/kg
Phosphates	≤ 0.5 mg/ I	≤ 0.1mg/kg
Conductivity	≤ 15µs /cm	≤ 3 µs /cm
PH Value	5 – 7.5	5 - 7
Appearance	Colorless, clean	Colorless, clean
Hardness	0.02 mmol/ I	0.02 mmol/ I

Appendix 2

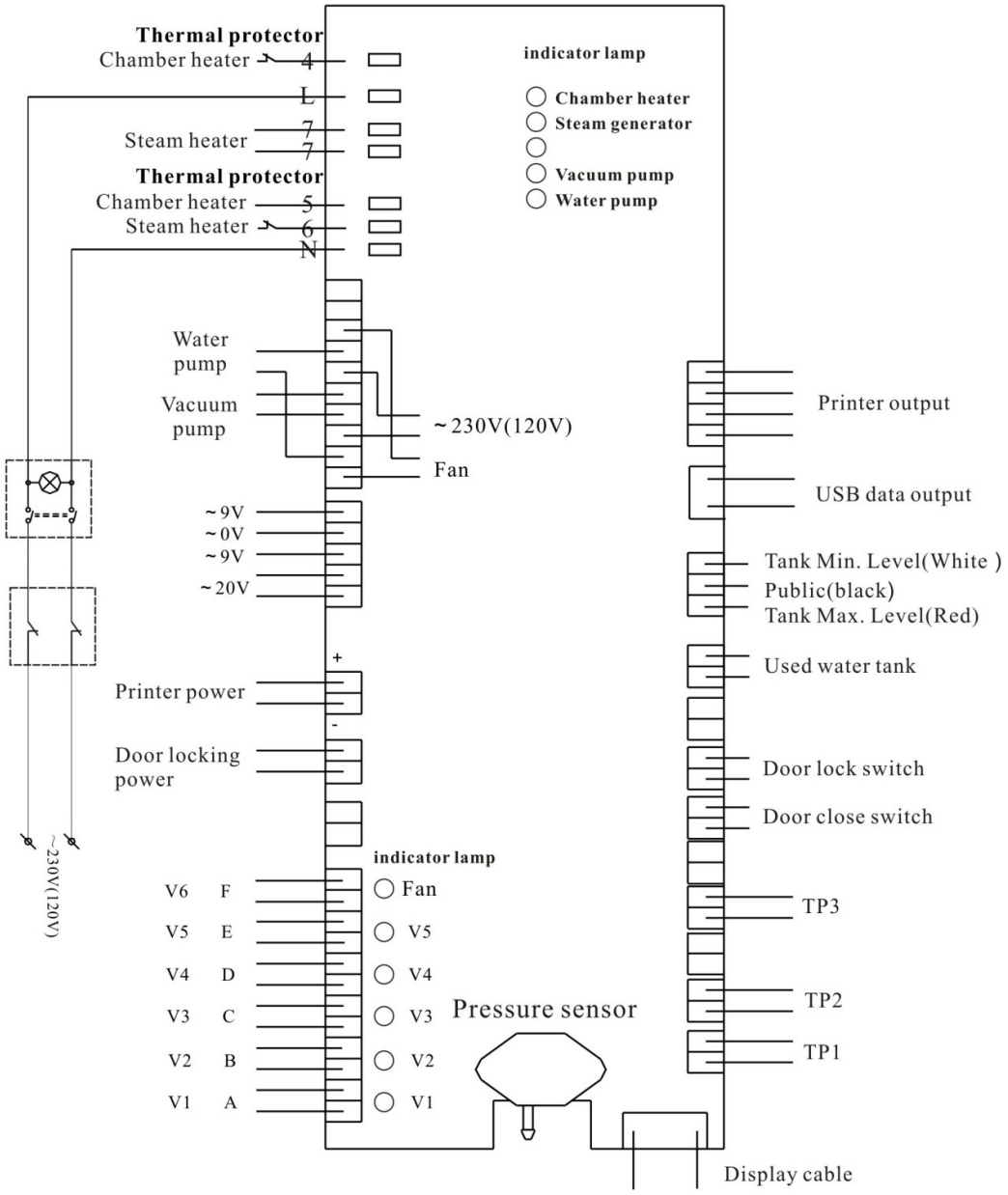
Diagrams of the sterilization programs

Programs **(STE-23-D)**	Temperature (°C)	Pressure (kPa)	Holding time (min)	Total time (min)	Type	Max load (kg)	Max load per tray (kg)
SOLID (Unwrapped)	134	210	4	15-35	Unwrapped solid material	5.00	1.50
	121	110	20	31-40			
WRAPPED	134	210	4	30-50	Unwrapped solid material	5.00	1.50
	121	110	20	48-60	Single-wrapped solid or hollow material	4.00	1.20
TEXTILE	134	210	8	36-55	Unwrapped porous material	1.25	0.40
					Single-wrapped porous material	1.10	0.30
	121	110	30	55-70	Dual-wrapped porous material	0.75	0.25
					Single-wrapped hollow material	4.00	1.25
					Dual-wrapped solid and hollow material	2.00	0.60
PRION	134	210	18	50-75	Unwrapped porous material	1.25	0.40
					Single-wrapped porous material	1.10	0.30
					Dual-wrapped porous material	0.75	0.25
					Single-wrapped hollow material	4.00	1.25
					Dual-wrapped solid and hollow material	2.00	0.60
LIQUID (optional)	134	210	10	35-60	Liquid	1.20	0.40
	121	110	30	35-65			
Drying (optional)	—	—	—	1-20	—	—	—
B&D test	134	210	3.5	28-35	—	—	—
Helix test	134	210	3.5	28-35	—	—	—
Vacuum test	—	—	—	20-25	—	—	—

The time required for sterilizer to be ready for routine use after the power is switched on is less than 15 minutes.
The maximum temperature of the 134°C sterilization cycle is 137°C
The maximum temperature of the 121°C sterilization cycle is 124°C

Appendix 3

Wiring Diagram

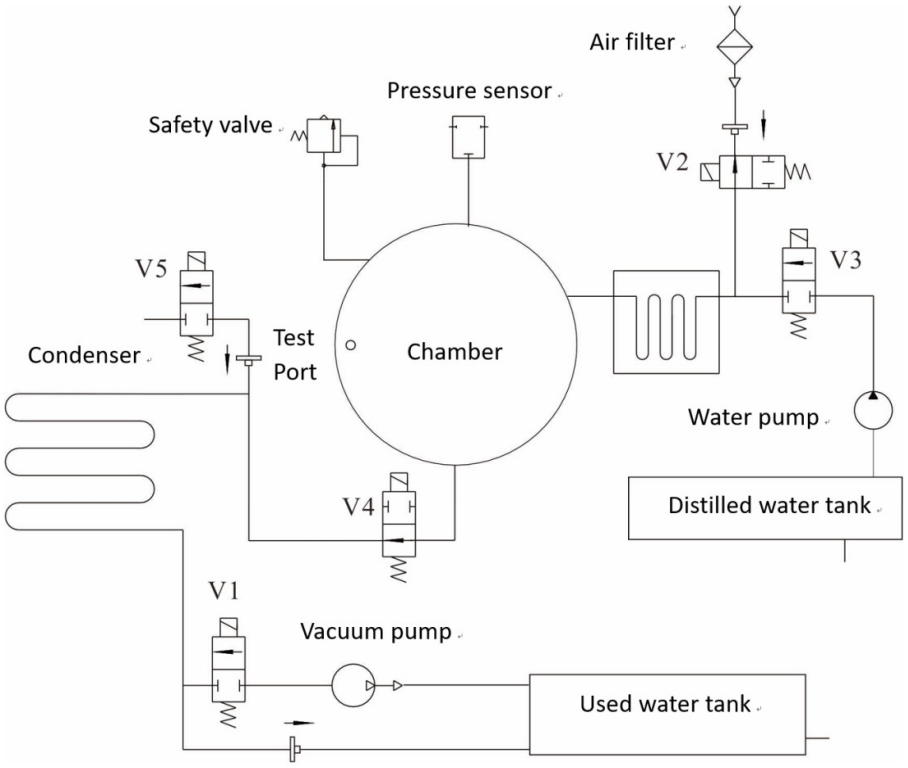


TP1: Steam generator temperature sensor
TP2: Inner temperature sensor
TP3: Temperature sensor of chamber wall

V1: Vacuum pump valve
V2: Air filter valve
V3: Pump valve
V4: Water release valve
V5: Vacuum pump start valve
V6: Vacuum pump fan

Appendix 4

Hydraulic Diagram



V1: Vacuum pump valve (Normally closed)
V2: Air filter valve (Normally open)
V3: Pump valve (Normally closed)
V4: Water release valve (Normally open)
V5: Vacuum pump start valve (Normally closed)

Certificate of Warranty

All new Clave16 or Clave 23 or Class B autoclaves installed by a Flight Dental Systems authorized dealer for a period of two (2) full year from the time of purchase. The warranty covers defects in parts, workmanship and materials for two (2) year except door gaskets and filters which are wear and tear items. This warranty does not include labor or installation. This warranty does not apply to any device that has been subjected to improper use or accident; nor shall it extend to autoclaves that have been repaired or altered by an unauthorized Flight dealer or technician. The warranty also does not include routine cleaning or preventive maintenance.

Flight's obligation is limited to the repair or replacement of parts for the autoclave. No other warranties or obligations are expressed or implied. The user must follow the instructions for use as outlined in the user manual. To activate the warranty, the registration card must be completed and mailed or faxed to Flight within fourteen (14) days of purchase or you may call our customer service department at the number listed below. Products will only be received and accepted for repair from an authorized dealer and only with prior return authorization from Flight.

All Transportation charges to and from Flight must be paid by the owner of the Autoclave. Flight will not accept COD shipments. If repairs are needed during the first 90 days after purchase of their autoclave and a local authorized service dealer is not available. Flight will arrange pick up of the unit at Flight's expense. This will be on an individually evaluated basis and ONLY with pre-approval. Note: If you have any questions or there are any difficulties with this instrument and the solution is not covered in this manual, please contact your dealer or Flight Dental Systems. Do no attempt to service this device yourself.

Authorized Dealer: _____

Installed by: _____

Product Serial Number: _____

Product Description: _____

Product Model: _____

Purchased Date: _____ Invoice Number: _____

End User Name: _____

Telephone: _____ Fax: _____

Email: _____

Address: _____

City: _____ State/Province:_____

Zipcode: _____ Country:_____

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Ver.1.2- 11/10/17

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Thank you for taking the time to review the Flight Dental Unit's Instruction Manual. Your feedback or comments regarding the document is welcomed. For any comments and concerns please mail, e-mail or phone us at:

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