INSTRUCTION MANUAL

PRESSURE STEAM STERILIZER AUTOCLAVE

STANDARD LINE

MODEL: LFSS08AA (LED)| LFSS12AA (LED)| LFSS18AA (LED)| LFSS23AA (LED)



Model: LFSS08AA (LED); LFSS12AA (LED)



Model: LFSS18AA (LED); LFSS23AA (LED)

IMPORTER
W POLSCE

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CE 0123

⚠ **WARNING**	Before using the device, the user is required to read carefully this manual. The manual is provided to inform you about the correct use of the autoclave. Use the unit in accordance with all the information contained in this manual.
⚠ **WARNING**	The device must be operated only by qualified personnel who have knowledge of and appropriate training in the operation of this type of equipment. A suitable person should be designated to operate and maintain the device.

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 WARNING	Before using the device, please read this manual carefully, be absolutely familiar with the safety information and correct use of the device. As a basis of reference, use only the instructions provided by the manufacturer together with the device. Do not use other instructions.

The manufacturer reserves the right to change the design and/or technical specifications, if necessary, without prior notice. The information contained in this manual is current as of the time of publication. In the event of a change in the place of use or the unit using the device, transfer or return this manual as part of the entire device.

DEVICE INFORMATION AND SAFETY INFORMATION

Scope of the manual

This manual applies to the following models of pressure steam sterilizers: LFSS08A (LED); LFSS12AA (LED); LFSS18AA (LED); LFSS23AA (LED).

Information about the device

Trade name	**STANDARD LINE AUTOCLAVE**
Model (REF):	
Serial Number (SN):	

Important safety information

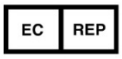
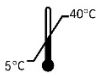
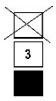
- Before using the device, read this manual carefully.
- Follow the information in the manual when operating the device.
- Keep the manual for the entire period of use of the device.
- If any problems arise with the device, contact the manufacturer or the importer.
- Designate a suitably qualified person to operate the device. The autoclave should only be operated by a qualified user who has the knowledge and proper training to operate this type of equipment.

User Manual:

With the purchase of the device, the user will receive 1 copy of the current u s e r manual. Pay special attention to all information next to these symbols:

 WARNING	Indicates potential danger/hazard to personnel. The information next to this symbol must be strictly adhered to, otherwise ignoring or failing to adhere to them, may result in death or serious injury.
 CAUTION	Indicates potential danger/hazard to personnel and equipment. The information next to this symbol must be strictly adhered to, otherwise if ignored or not followed, it may lead to serious injury or damage to equipment.
 IMPORTANT	Indicates a potential hazard/hazard to the equipment. The information next to this symbol must be strictly adhered to, otherwise ignoring or not adhering to it, may lead to damage or malfunction of the equipment (e.g., lead to low sterilization efficiency).

Explanation of symbols

	Caution, see operating instructions.		CE mark with the 4-digit number of the Notified Body (symbol indicating compliance of the device with the requirements of Directive 93/42/EEC).
	Protective grounding - device of protection class I.		Caution - hot surface.
	See the instruction manual. Before using, familiarize yourself with with the operating instructions.		Dispose of the device in accordance with the requirements of Directive 2012/19/EC. Return the used device to the treatment facilities for waste electrical and electronic equipment, in accordance with in accordance with local regulations in force in this regard.
	Manufacturer.		Authorized representative in the European Union.
	Date of manufacture.		Serial number.
	Permissible temperature range: +5°C~ +40°C.		Store in a dry place.
	Humidity range (relative humidity≤ 80%).		Permissible number of stacking layers. Range of storage heights (stacked maximum 3).
	Do not turn. Do not move by rolling (do not roll).		Top, do not overturn.

WARNINGS AND IMPORTANT SAFETY INFORMATION

Read the following warnings and information carefully.



WARNING

Ignoring or disregarding these warnings can lead to: electric shock, fire, equipment damage or property damage.

1. Do not use the autoclave other than as specified (intended) by the manufacturer. Use the equipment only in accordance with the information contained in this manual.
2. Connect the autoclave only to a triple grounded electrical outlet (AC 230V/10A/50Hz~60Hz). Always check that the outlet with the grounding pin is properly installed and connected. Do not place the autoclave in such a place where access to the electrical outlet will be difficult.
3. Do not connect to a power source with parameters other than those indicated in this manual and on the device's rating plate.
4. Do not touch the socket and plug with wet or damp hands.
5. Do not damage, modify, pull, bend, coil or twist the power cord. Do not place any objects on the cord.
6. Do not place the autoclave on an unstable, sloping or uneven surface.
7. Do not block or cover the autoclave's door, ventilation and heat dissipation openings.

8. Do not place any objects in front of or on the unit.
9. Do not remove the nameplate, any labels, warning and information stickers from the device.
10. If any unpleasant odor is smelled or an unusual sound is heard (a sound other than that heard when the unit is running, such as the sound of a pump running), immediately disconnect the unit from the power source and contact the manufacturer or the importer.
11. If the autoclave will not be used for a long time for various reasons, unplug the power cord from the electrical outlet and place the unit in a dry and cool place.
12. Use the device only for the purposes specified in this manual. The manufacturer is not responsible for damages caused by improper operation of the autoclave.
13. The manufacturer of the device is not responsible for any independent repairs, modifications, structural changes or disassembly of the device, carried out/conducted by an unauthorized person or an unqualified technician. Repairs to the device can be performed only by an employee of a company authorized by the manufacturer providing warranty and post-warranty service.



CAUTION

Only distilled water can be used for the device. If you use any other water, such as tap water, you may damage the autoclave and lose warranty claims. Change the water more often than once a week! Clean the tank for clean and dirty (used) water, at least once a week or more often if necessary. Only water may be used to clean the tank. Do not use other liquids or agents.

1. GENERAL INFORMATION

The LF series high-pressure steam sterilizer is specially designed and manufactured for use in hospitals, medical offices and facilities (clinics), as well as laboratories, etc. It is intended for use only by a professional user, i.e. a doctor, technician or other specialist. The device is controlled by a microprocessor with an intelligent control system and a user-friendly interface, making it safe, reliable and easy to use. The parameters and operation status of the device will be automatically displayed on the digital screen during the running cycle. In the event of over-temperature or over-pressure, the autoclave will activate the automatic self-diagnosis function and activate protective measures (safeguards) to ensure the effectiveness of the sterilization process.

2. RANGE OF USE

The autoclave is particularly suitable for hospital departments, dentistry and ophthalmology, as well as for Biology Institutes conducting research projects, for sterilization of surgical instruments, dental instruments, syringes, etc.

3. DEVICE PARAMETERS AND STERILIZATION PROGRAMS

3.1. Device parameters

3.1.1. Chamber specifications

Parameter	LFSS08AA (LED)	LFSS12AA (LED)	LFSS18AA (LED)	LFSS23AA (LED)
Dimensions (diameter x depth):	17 x 32 cm	20 x 36 cm	25 x 35 cm	25 x 45 cm
Capacity:	8L	12L	18L	23L

3.1.2 Table defining the maximum weight and volume of cargo/loads

Parameter	LFSS08AA (LED)	LFSS12AA (LED)	LFSS18AA (LED)	LFSS23AA (LED)
Maximum load weight*) (kg)	3,0	4,5	6,0	7,5
Maximum load volume*) (L)	≤ 70%	≤ 70%	≤ 70%	≤ 70%

*)Applies to batches sterilized in programs: 121°C Solid / 121°C Unwrapped (121°C Lite / 121°C Unwrapped); 121°C Universal / 121°C Wrapped (121°C Universal / 121°C Packaged); 134°C Solid / 134°C Unwrapped (134°C Lite / 134°C Unwrapped); 134°C Universal / 134°C Wrapped (134°C Universal / 134°C Wrapped).

3.1.3. Technical parameters

Parameter	LFSS08AA (LED)	LFSS12AA (LED)	LFSS18AA (LED)	LFSS23AA (LED)
Maximum operating temperature:	137°C	137°C	137°C	137°C
Maximum working pressure:	240 kPa	240 kPa	240 kPa	240 kPa
Voltage and power rating:	AC 230 V, 50/60 Hz, 1950 W			
Lifetime:	5 years			

3.1.4 Operating environment

Parameter	LFSS08AA (LED)	LFSS12AA (LED)	LFSS18AA (LED)	LFSS23AA (LED)
Ambient temperature:	+5°C~ +40°C			
Relative humidity:	≤ 80%			
Atmospheric pressure:	> 70 kPa			

3.2. Sterilization programs

Program	Sterilization time	Sterilization temperature	Vacuum rate	Sterilization pressure	Drying time
121°C Solid / 121°C Unwrapped (121°C Lite / 121°C Unwrapped)	**20 min**	**121°C**	**1**	**110 kPa**	**4 min**
121°C Universal / 121°C Wrapped (121°C Universal / 121°C Wrapped)	**20 min**	**121°C**	**3**	**110 kPa**	**15 min**
134°C Solid / 134°C Unwrapped (134°C Solid / 134°C Unwrapped)	**4 min**	**134°C**	**1**	**210 kPa**	**4 min**
134°C Universal / 134°C Wrapped (134°C Universal / 134°C Wrapped)	**4 min**	**134°C**	**3**	**210 kPa**	**15 min**
B&D Test (B&D Test)	**3.5 min**	**134°C**	**3**	**210 kPa**	**10 min**
Vacuum Test	**15 min**				

Sterilization time can be individually set!

IMPORTANT

Important: B&D TEST: The display shows 4 minutes, but usually the leak test takes about 3.5 minutes.

4. CONTROL PANEL

4.1. Control panel description and functional buttons

4.1.1. Display of the current temperature/error code

The window marked with the number 1 displays the internal temperature chamber. Unit: °C.

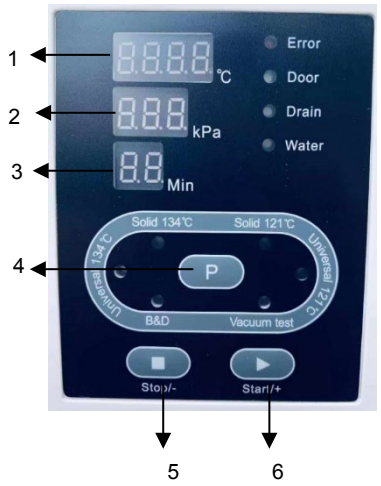
If the value displayed is:

- "131.3" means that the temperature inside the chamber is 131.3°C.

The error code is also displayed in this window.

If any abnormal situation or fault occurs during the operation of the device, the corresponding error code number will be displayed.

Refer to the information in the table in Section 7 to solve the problem.



4.1.2. Displaying the current pressure inside the chamber

The window marked with the number 2 displays the current pressure (relative pressure value) inside the chamber. Unit: kPa.
If the value displayed is:

- "-80" means that the pressure inside the chamber is -80 kPa.
- "214" means that the pressure inside the chamber is 214 kPa.

WARNING	If there are any problems, please contact the manufacturer or the importer.

4.1.3. Operation status

During operation, the running program light is lit. For a description of the various stages of each sterilization cycle, see Appendix 1.

4.1.4. Program indicators and function buttons

4.1.4.1. Introduction to pre-programmed programs

The autoclave has 6 pre-programmed programs: 121°C Solid, 121°C Universal, 134°C Solid, 134°C Universal, B&D Test, Vacuum Test. Whereby the programs: 121°C Solid, 121°C Universal, 134°C Solid, 134°C Universal are sterilization programs.

CAUTION	The Solid program is designed to sterilize unwrapped solid instruments/objects, such as pliers, scissors, forceps, etc. The Universal program is designed to sterilize all tools/objects, such as: tips (handles), etc., excluding liquids.
IMPORTANT	The 121°C/134°C program has no significant differences between the 134°C sterilization process, and the process at 121°C. Therefore, if the tools/objects cannot be sterilized at a high temperature (134°C), select a program with a lower temperature (121°C).
CAUTION	Before running program check whether tools/objects can be sterilized at a temperature of at least 121°C. Do not sterilize items that do not show thermal resistance to this temperature value.

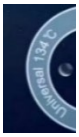
The Vacuum Test program is used to perform a leak test (to check the tightness of the sterilization chamber, including its piping). Perform a leak test at least once a month to check the device. The device can only be used after successful completion of the test. If the device does not complete the test with a correct result, turn it off and immediately contact the manufacturer or the importer.

CAUTION	The test results may be incorrect if the sterilization chamber is hot. Leakage test Carry out only when the chamber is cold. Run the Vacuum program first, before starting routine operation of the unit, on the day the test is performed.

The B&D Test program is designed to run the B&D Test or the Helix Test.

IMPORTANT	The B&D Test and Helix test program are the same type of test. The only difference between the two i s , that for the B&D Test program, a ready-made Bowie Dick type test package is used, and for the Helix test program, a "batch control test" is needed (is evaluated using a process test instrument - PCD).
CAUTION	Run the B&D Test program daily, before starting routine operation of the device (before starting the sterilization program).

4.1.4.2. Program selection



There are 6 lights (indicator lights) assigned to each program on the display, e.g. if the 134°C Universal program light comes on, it means that the program has been selected.

Press the P button 1 time to switch to the next program.

4.1.4.3. Start/+ button

The Start/+ button allows you to start the selected program.

4.1.4.4. Stop/- button

The Stop/- button allows you to immediately stop the running program. In the event of a malfunction, an abnormal situation, or if a cycle needs to be interrupted, press and hold the STOP/- button for 5 seconds to stop the running program.

4.1.4.5. Error indicator light

If the Error light on the display lights up flashing, it means that a malfunction or failure has occurred during the operation of the device. In such a situation, the device will automatically raise an alarm, stop the running program and lower the pressure.

4.1.4.6. Door indicator light

The door of the autoclave must be tightly, properly closed before starting the program. Otherwise, the Door indicator light will be on and the program cannot be started until the door is properly closed.

4.1.4.7. Drain indicator light

If the Drain indicator light comes on, it means that the water level in the used (dirty) water tank is too high and the tank must be emptied.

If the waste water tank is full during the running program, the Drain light will light up and flash and a 10-times beep will be heard. When the program is finished, drain the used water.

4.1.4.8. Water indicator light

If the Water light flashes, it means that the water level in the distilled (pure) water tank is too low and may lead to failure of the sterilization cycle (error code E8 or E9 will appear), distilled water should then be refilled.

If the flashing Water light comes on steadily while filling the tank, it means that the tank is full.

5. UNIT INSTALLATION

5.1. Setting up the device

Place the autoclave in a well-ventilated room. Set up to provide at least 10 cm of free space at the front and sides and, at least 20 cm above, and from the back of the autoclave. Do not block or obstruct the ventilation and heat dissipation openings.



CAUTION

Place the autoclave in a horizontal (horizontal) position on an even stable surface, such as a table or countertop. Make sure that the structure of the table intended for placing the autoclave is stable and can withstand the weight of the device.

5.2. Setting the atmospheric pressure

Before the first use or after each transfer of the unit, adjust the atmospheric pressure value, otherwise, you will not be able to open the door or other problems may occur.

How to adjust the pressure:

a) Turn off the power supply.

b) Open the door.

c) Turn on the power, wait about 20 seconds and turn off the power. The pressure will automatically be adjusted.



WARNING

The unit may not work if the user does not adjust the pressure.

5.3. Setting the date and time

1. Press and hold the P button for about 10 seconds until PASS appears in the temperature window, i.e.: .
2. Then release the button and use the Start/+ button to change the displayed value 000 to 018, ie: .
   Pressing the Start/+ button 1 time will cause the rate of change to gradually increase by 1, while if the button is held longer it will cause the values to change faster to make it easier to quickly reach the required higher value.
3. Press the P button 1 time , until the d1 symbol appears in the pressure window . The temperature window will display a value, such as "11", indicating the year 2011. Press the Start/+ button to increase the value by 1 or the Stop/- button to decrease it by 1.
4. Press the Stop/- button to set the month (in the same way as the year setting). This setting will be shown in the pressure window on the display as:

   d1: year d2: month d3: day
   d4: hour d5: minute d6: second
5. Turn off the power to finish making the above settings.

6. OPERATION

Preparation for use

Plug the power cord into the receptacle on the back of the unit and then into an electrical outlet. When the power button is pressed to the I position, a light will illuminate to indicate that the unit has been connected to the power supply and is in the initial state, but has not yet started heating up the chamber. The operating state will be displayed as Ld . When the Start/+ button is pressed, the autoclave will enter the ready-to-operate mode.

WARNING Ensure that the unit has an effective and reliable grounding.

6.1. Refilling with water

If the Water light comes on in the display, a sound is heard, and the Start/+ button is inactive
this means that the water level in the clean (distilled) water tank is too low and the tank needs to be refilled. The clean water tank is located at the top of the unit:



Model: LFSS08AA (LED), LFSS12AA (LED).



Model: LFSS18AA (LED), LFSS23AA (LED).

If the water is refilled to a level sufficient for 1 cycle, the indicator light will go off and no sound will be heard. At this point you can stop or continue refilling the water. If the tank continues to refill the Water light will illuminate and a beep will be heard 10 times. If the indicator light goes off and no sound is heard, it means that the tank is already full and water refilling should be stopped immediately.

CAUTION

Pour only distilled water of suitable quality into the autoclave, so as not to cause clogging of the steam generator and valves. The user is fully responsible for damage to the autoclave caused by the use of water other than that required.

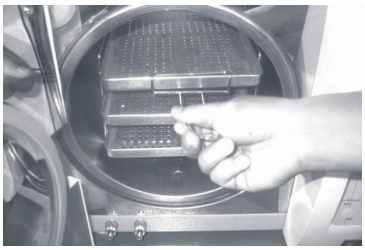
IMPORTANT

1. Before filling the water, turn on the autoclave and adjust its position with the feet. So that the front of the device is raised in the ratio: min. 1 cm to the rear of the device (the front should be slightly higher than the rear of the device). When filling water, the autoclave must always be in a horizontal position, on a stable level surface.
2. Do not tilt, turn or move the unit if the clean and used water tanks are full.
3. Every time you fill the clean water tank, you should also empty the used water tank.
4. If the dirty (used) water tank is full, you can press the Stop/- button to turn off the sound. On the other hand, the Drain light will not turn off until the used water is drained.

6.2. Running of the unit

If the Water and Drain lights are not flashing, it means that the unit is in a ready-to-operate state.

6.2.1. Placing the charge in the chamber



CAUTION

Place the sterilization load in the sterilization chamber according to the following guidelines:

1. The load to be placed must not make up more than 70% of the chamber volume or weigh more than the indicated maximum load weight (see section 3.1).
2. Contact of the items to be sterilized with the walls of the chamber is prohibited, especially at the air outlet of the chamber. Ensure, at least 10 mm clearance between the objects and the inner walls of the chamber. It is also required to provide free space between packages to ensure free penetration of steam.
3. To evaluate the effectiveness of sterilization, place the indicator used (e.g., chemical or biological) inside the package.
4. Use a handle/grip to place and remove the charge to avoid the risk of burns.

6.2.2. Closing the autoclave door

After placing the sterilization load in the chamber, close the door properly (turn the door handle as far to the right as possible) and check that the Door light has gone out.

WARNING

The sterilization cycle will not start if the door handle is not turned to the maximum right, set to the so-called "maximum position". The program will not start even if the Start/+ button is pressed, and the display will show the error code number "E6".

IMPORTANT

If there will be high temperature and pressure inside the chamber, proper closing of the door may be difficult. You should then either close the door quickly or wait a while (about 30 seconds) and only then try to close the door again.

6.2.3. Program selection

Once the door is properly closed, select a program using the button 

, according to the type of load in the chamber. Once selected and started, the program light will stay on throughout the cycle and will not go off until another program is selected.

6.2.4. Starting the program

After selecting the desired program, press the Start/+ button to start the program. The device will automatically complete all cycle steps, i.e. the preheating phase, 3-fold vacuum generation, sterilization and drying. The full cycle time depends on: the initial temperature in the chamber, the type of load and the selected program.

6.2.5. Completion of the cycle

When the cycle is complete, the display will show the symbol Ed and 3 beeps will be heard. Only then can the door be opened and the trays with sterilized instruments can be removed using a special handle (handle).

CAUTION	Immediately refill the clean water tank if the display shows a warning about low water level. If the water is not refilled, an alarm will sound and the error code "E8" or "E9" will be displayed.

6.2.6. Turning off the device

Turn off the autoclave after finishing work. If the unit will not be used for a long time, also remove the power cord from the electrical outlet.

WARNING	1. Always use the handle (grip) to remove trays from the chamber to avoid the risk of burning yourself. 2. Do not open the door until the chamber pressure reaches "-0.5~ 0.5".
IMPORTANT	Use indicator/indicators (e.g., sheets, strips, test strips or indicator bags, etc.) of each batch in each cycle to check the sterilization process.

7. ABNORMAL SITUATIONS

If a malfunction or any situation abnormal to the proper operation of the unit occurs during operation, the autoclave will automatically raise an alarm, stop the program, stop heating and lower the pressure to ensure operator safety. In such a situation, the corresponding error code number will be displayed on the screen. Immediately after the alarm occurs, write down the displayed error code number and turn off the power. Do not open the door. Then turn the power back on and wait for a while until the pressure returns to the required level of "-0.5 ~ 0.5".

IMPORTANT	If an error code is displayed, it is recommended to run the program once again and check if the code number code is displayed again. If the error code appears again, contact the manufacturer or With an authorized service center to solve the problem.

Below is a list of error code numbers with their explanations. If it is not possible to solve the problem on your own, according to the information shown in the table below, contact the manufacturer or an authorized service center as soon as possible to solve the problem.

List of error codes and possible solutions

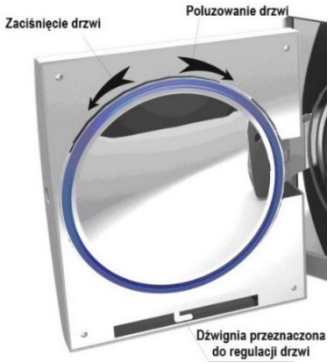
L.p.	Code number Error	Sound	Cause	Possible solutions
1.	E1	Long signal	The temperature sensor is faulty.	Check the temperature sensors.
2.	E2	Long signal	Pressure too high.	Perform leakage test (Vacuum Test). If the result is unsuccessful check vacuum pump.
3.	E3	Long signal	Temperature too high Or overheating of steam generator.	Check the steam generator, generator and heating ring temperature sensor.

L.p.	Code number Error	Sound	Cause	Possible solutions
4.	E4	Long signal	Preheating Failed.	Check that the steam generator and its heater Have not overheated.
5.	E5	Long signal	Pressure lowering has failed.	Check the drain valve and the valve 3-way valve.
6.	E6	Long signal	The door sensor is defective.	Check the door sensor.
7.	E7	Long signal	Atmospheric pressure too low.	Turn off the power, open the door and turn on the power again, then wait 2 minutes.
8.	E8	Long signal	Raising the pressure failed.	Check the water level in the tank. Check water pump, steam generator, hoses and heating rod.
9.	E9	Long signal	Pressure maintenance has failed.	Check the water level in the tank.
10.	E00	Long signal	The electric lock on the door is defective.	Check the electric lock (check the electromagnet for is not damaged or jammed).

8. MAINTENANCE

8.1. Adjust and check the tightness of the door

Pull lever and rotate door to adjust its tightness. First, pull the lever downward. Then turn the door counterclockwise (counterclockwise) to reduce the distance between the door and the chamber, i.e. "clamp the door" closer to the chamber. On the other hand, to increase the distance - "loosen the door", turn the door to the right (clockwise).



Door adjustment steps:

1. Press the lever slightly downward.
2. Turn the door in the specified direction at the correct angle.
3. Release the lever.
4. Stop the adjustment at the point where any movement of the door is no longer

WARNING After adjusting the door, it is essential to perform a leakage test (Vacuum Test). If the unit is leaking, adjust the door correctly again.

CAUTION If the door is adjusted too loosely, the seal may burst (explode)! Be careful when adjusting the door, and make sure the door is properly and well adjusted!

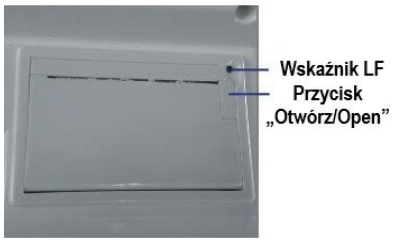
8.2. Replacing the paper in the printer

For models: LFSS08AA (LED), LFSS12AA (LED), the printer is built into the door, on the right side of the unit.

For models: LFSS18AA (LED), LFSS23AA (LED), the printer is built into the front (stationary) part of the device, under the cover.

Replacing the paper roll in the printer:

Press the "Open/Open" button to open the printer cover and replace the paper roll. Close the cover and put a sheet of paper on it.





Verify that the paper is correctly placed on the tray:

Press the "LF" indicator so that the printer can retrieve the paper from the feeder. If there is any problem, replace the paper roll again. If the printer works properly, but no information appears on the printout, remove the paper roll and place it correctly (in this situation, turn the roll inside out).

CAUTION

Only one-sided printing of results is possible.

8.3. Cleaning the water tank

Change the water, clean and disinfect the tank regularly, at least once a week or more often if necessary. Only water can be used to clean the tank. Do not use other liquids or agents, such as: chlorine-based, methyl alcohol, sodium hypochlorite or acetone, etc., they may damage the tank.

8.4. Cleaning the chamber and accessories

Once a week or more often if necessary, clean the chamber, the autoclave housing and the accessories attached to the unit (rack, trays, tray removal handle, etc.) with a clean, soft and dust-free cloth.

CAUTION

Do not use a wire brush, steel brushes to clean the door, its seal and the chamber, woolen or abrasive materials, as well as agents containing chlorine compounds. Do not use chemicals not intended for cleaning this type of equipment for cleaning.

8.5. Replacement of the bacteriological filter

Replace the bacteriological filter regularly (at least, after every 150 cycles performed).

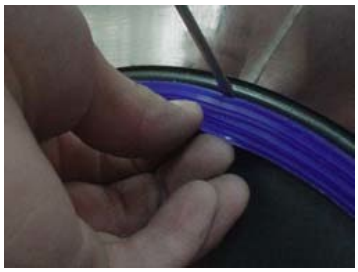
8.6. Cleaning the door seal

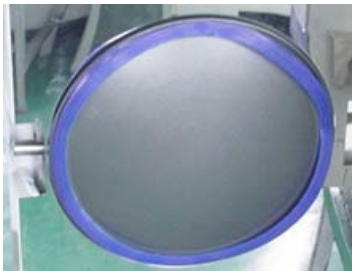
Clean the door gasket regularly using distilled water. If the unit is leaking after cleaning the gasket, immediately replace the gasket with a new one.

8.7. Replacing the gasket

To replace the gasket, you will need a flat blunt screwdriver.

1. Hold the gasket with one hand, while with the other hand place the screwdriver in the gap between the door and the gasket. Then very carefully and slowly separate a small part of the gasket from the door, and only then carefully remove the entire gasket.
2. After removal, thoroughly clean the gasket and check for damage. If it is damaged, replace it immediately with a new one.
3. After cleaning, the undamaged and clean gasket should be gently inserted into its place.
4. Caution: If placing the gasket in its place is significantly difficult you can use a screwdriver to do so. Carefully and very gently press the gasket with the screwdriver until it returns to its place.





8.8. Checking the safety valve



Model: LFSS08AA (LED), LFSS12AA (LED).



Model: LFSS18AA (LED), LFSS23AA (LED).

Regularly, every 6 months, check that the valve opens properly and steam is completely released to prevent the safety valve from failing. Check the valve as follows:

1) Run the program at 134°C.
2) Wait until the pressure rises to about 100 kPa. Then pull the ring on the safety valve to move the valve to the open position and wait about 1 second, if the air and steam are completely released it indicates that the safety valve has been opened. If the valve does not open, stop the program and immediately contact an authorized service center to have the safety valve replaced.
3) If the test was successful, let go of the ring and wait for the completion of the program run.
4) Observe whether steam escapes from the safety valve during the remaining phases of the running program. If it does, contact an authorized service center to have the safety valve replaced. If no steam escapes, it means that the valve is working properly.

WARNING

When the ring is pulled, steam will be ejected. Pull the ring with a suitable tool, such as a flathead screwdriver or other tool. Absolutely do not do this directly with your hand. The operator must stand as far back as possible and always use special insulated protective gloves to avoid the risk of burns.

9. TRANSPORT AND STORAGE CONDITIONS

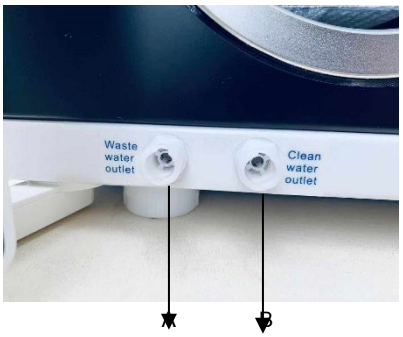
9.1. Preparing the device for transport

Wait until the unit has cooled completely, then remove the power cord from the electrical outlet.

9.2. Emptying the tanks

To empty the tanks, connect the hose directly to the corresponding drain valve. The drain valve of the dirty (used) water tank is marked with the letter A in the picture opposite. On the other hand, the clean water tank drain valve is marked with the letter B. Then turn the connection to the left (counterclockwise) to start draining water.

If the autoclave will not be used for a long period of time, empty the tanks.



9.3. Transport conditions

Refer to the conditions in the sales contract.

9.4. Storage conditions

Store the autoclave in a clean, dry and well-ventilated room. Store at a temperature between +5°C and +40°C and a relative humidity of no more than 80%. Do not use or store the unit in the presence of gases, explosives, open sources of heat or flammable substances.

WARNING

Take special care not to damage the device during transportation or change of location.

10. SERVICE AND WARRANTY CONDITIONS

Servicing is necessary for the unit to operate properly. An annual (every 12 months) inspection of the unit is required. Service may be performed only by qualified personnel of the warranty and post-warranty service company designated by the manufacturer.

Detailed warranty conditions are presented in the warranty card.

11. ACCESSORIES

Lp.	Item name (designation)	Quantity (pcs.)
1.	Hose (drain line)	1
2.	Trays	3
3.	Power cord	1
4.	Tray stand	1
5.	Tray removal handle	1



12. ANNOUNCEMENTS

12.1. Error codes and their explanation

Lp.	Code symbol	Status	Explanation
1.	Ld	Preparation	Placing the charge / draining the water Dirty (used) water.
2.	HE	Preheating	Heating up the heating ring and steam generator Steam.
3.	Ur	Vacuum	Generation of vacuum.
4.	rE	Raising the temperature	Raising the temperature and pressure in the chamber.
5.	dn	Drainage of water and steam release	Draining water and releasing steam During the cycle.
6.	Display of time operation	Sterilization	Display of the time remaining to complete sterilization.
7.	Display of the time drying	Drying	Display of the time remaining to complete drying.
8.	LE	Pressure equalization	Equalization of the chamber pressure with the atmospheric pressure.
9.	Ed	End of the program	End of the process, you can open the door and carefully remove the sterilization load.

12.2. Adjusting the sterilization time

1. Adjusting the sterilization time

1.1. Press the button 

, to select the program you want to adjust individually: Once the program is selected, the corresponding program indicator light will come on.

1.2. Press and hold the 

button for 10 seconds , until 

appears in the temperature window .

1.3. Then release the button and use the START/+ button to set the appropriate value from 000 to 058 . 

Pressing the START/+ button 1 time will cause the rate of change to gradually increase by 1, while if the button is held longer it will cause the values to change faster to make it easier to quickly reach the required higher value.

1.4. Adjusting the time

Press the START/+ button to increase the value by 1 or the STOP/- button to decrease the value by 1.

You can set a range from 4 to 60 minutes.

1.5. Completing the settings

Press the 

button to save the settings you have made.

2. RESETTING TO DEFAULT SETTINGS

2.1. Press and hold the 

button for 10 seconds , until 

appears in the temperature window .

2.2. Then release the button and use START/+ to set the desired value from 000 to 068. Pressing the Start/+ button 1 time will cause the rate of change to gradually increase by 1, while if the button is held longer it will make the values change faster to make it easier to quickly reach the required higher value.

2.3. Press 

, to save the default sterilization time.



WARNING

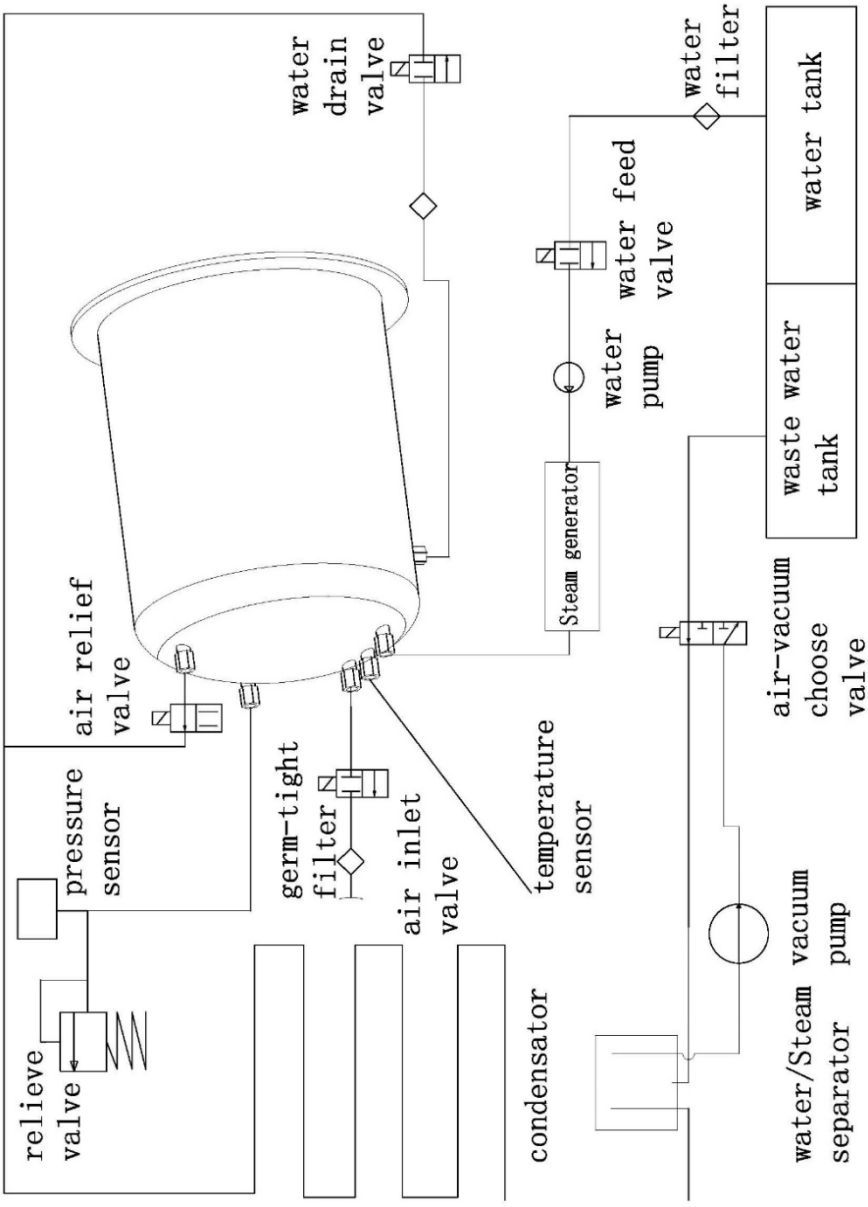
The recommended time of the factory-installed programs has been verified according to the method specified in ISO 14161:2009. After each change of the factory-set time, the changed time should be verified according to the methodology of ISO 14161:2009 to check the effectiveness of the sterilization process. If, after changing the factory-set time, the verification test is not carried out the manufacturer does not guarantee the full effectiveness of the sterilization process, and the user bears full responsibility for the ineffectiveness of the process. Verification can be carried out by the user, who has adequate training in this field or specialized companies.



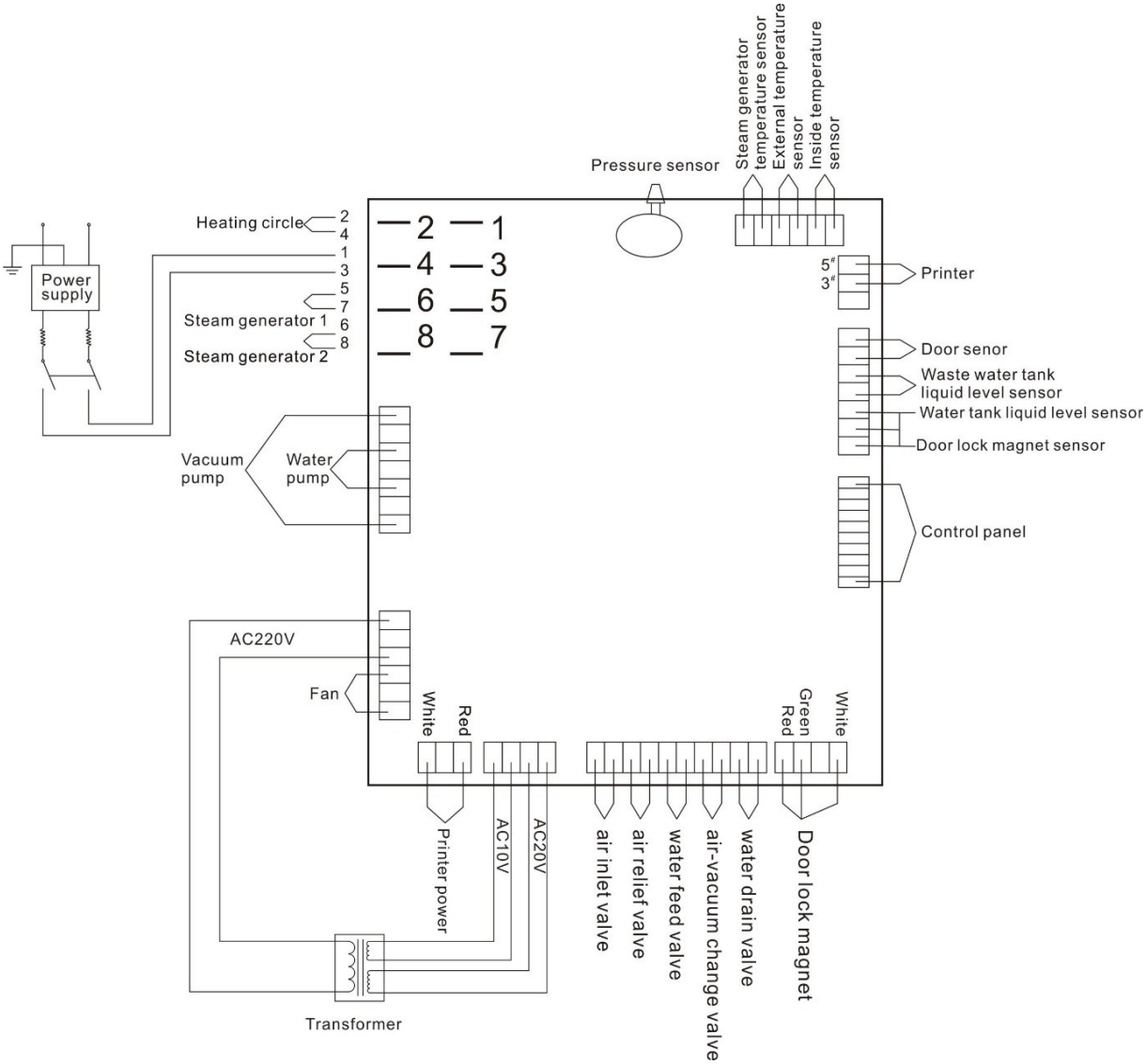
NOTE

Conversion of pressure units: 1 bar= 0.1 MPa= 1.0 x 105 Pa= 1.0197 (at)= 0.9869 (atm).

12.3. Construction diagram



12.4. Electrical circuit diagram



Above figure: 1 - AC 230V interface (input module), 2- FireWire serial bus, 3 - 1-phase power supply voltage.

Parameters of individual components:

Vacuum pump supply voltage: AC 230V 50Hz 100W Water

pump supply voltage: AC 230V 50Hz 47W Heater circuit:

AC 230V 50Hz 1500W

Heater circuit: AC 230V 50Hz 750W

Solenoid valve: DC 24V 5W

12.5. Electromagnetic compatibility (EMC) tables

MANUFACTURER'S INFORMATION AND DECLARATION - ELECTROMAGNETIC EMISSION		
STANDARD LINE AUTOCLAW MODEL: LFSS08AA (LED), LFSS12AA (LED), LFSS18A (LED), LFSS23AA (LED) is designed for is designed for operation in the electromagnetic environment described below. The purchaser or user of the device should make sure that the device is used in just such an environment.		
Emissivity test	**Level Compliance**	**Electromagnetic environment - guidelines**
RF emissions CISPR 11	Group 1	The autoclave uses RF (radio frequency) energy only for its internal functions. Therefore, its RF emissions are very low and there is no possibility of causing interference in electronic devices located in the vicinity.
RF emissions CISPR 11	Class B	The autoclave is suitable for operation in all establishments, including residential premises and premises directly connected to the public low-voltage network that supplies residential buildings.
Harmonic emission IEC 61000-3-2	Class A	
Emission - voltage fluctuations and light flicker IEC 61000-3-3	Meets requirements	

MANUFACTURER'S INFORMATION AND DECLARATION - ELECTROMAGNETIC IMMUNITY			
STANDARD LINE AUTOCLAW MODEL: LFSS08AA (LED), LFSS12AA (LED), LFSS18A (LED), LFSS23AA (LED) is designed for is designed for operation in the electromagnetic environment described below. The purchaser or user of the device should make sure that the device is used in just such an environment.			
Immunity test	**Test level IEC 60601**	**Compliance level**	**Electromagnetic environment - guidelines**
Electrostatic discharge (ESD) in accordance with according to IEC 61000-4-2	±6 kV (contact) ±8 kV (airborne)	±6 kV (contact) ±8 kV (airborne)	Floors should be wood, concrete or ceramic tile. If the floors are covered with synthetic material, humidity relative in the room must be, at least, 30%.
Rapid electrical transients in accordance with According to IEC 61000-4-4	±2 kV (for supply lines) ±1 kV (for lines input/output)	±2 kV (for power supply lines) ±1 kV (for input/output lines input/output)	The mains power supply must meet the standard conditions in hospital or commercial facilities.
Surge immunity tests For overvoltage according to IEC 61000-4-5	±1 kV line to line ±2 kV line to ground (ground)	±1 kV line to line ±2 kV line to ground (grounding)	Power supply mains must correspond to conditions standard prevailing in hospital or commercial facilities.
Testing for resistance to voltage drops, short interruptions (disturbances) and voltage fluctuations According to According to IEC 61000-4-11	<5% U_T (>95% U_T drop) For 0.5 cycles 40% U_T (60% U_T drop) for 5 cycles 70% U_T (30% U_T decline) for 25 cycles <5% U_T (>95% U_T decline) for 5 s	<5% U_T (>95% U_T decline) for 0.5 cycle 40% U_T (60% U_T decline) for 5 cycles 70% U_T (30% U_T decline) for 25 cycles <5% U_T (>95% drop in U_T) for 5 s	The mains power supply must correspond to the standard conditions in hospital or commercial facilities. If the user needs to ensure continuous operation of the device during power outages, it is recommended to power the device with an uninterruptible power supply or a battery.
Testing for immunity to electromagnetic interference in accordance according to IEC 61000-4-8	3 A/m	3 A/m	The intensity of mains frequency magnetic fields must correspond to the standard conditions in hospital or commercial facilities.
Note: U_T is alternating current (AC) power supply before applying the test level			

MANUFACTURER'S INFORMATION AND DECLARATION - ELECTROMAGNETIC IMMUNITY

STANDARD LINE AUTOCLAW MODEL: LFSS08AA (LED), LFSS12AA (LED), LFSS18A (LED), LFSS23AA (LED) is designed is designed for operation in the electromagnetic environment described below. The purchaser or user of the device should make sure that the device is used in just such an environment.

Testing immunity	Test level IEC 60601	Level Compliance	Electromagnetic environment - guidelines
			Portable devices using radio waves must not be used closer to any components of the device, including its wiring, than the recommended distance calculated based on the formula applicable for the frequency of the transmitter in question.
Conducted interference induced by RF fields IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	Recommended spacing d = $1.2\sqrt{P}$ d= $1.2\sqrt{P}$ 80 MHz to 800 MHz d= $2.3\sqrt{P}$ 800 MHz to 2.5 GHz , where P is the maximum rated output power of the transmitter expressed in watts (W) according to the transmitter manufacturer, while d is the recommended distance in meters (m). The field strength of installed RF transmitters, according to the electromagnetic control of the location [a], should not exceed the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated interference IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	

Note 1: At 80 MHz and 800 MHz, the higher frequency range is used.

Note 2: These guidelines may not apply in all situations. The propagation of electromagnetic waves is affected by their absorption and reflection by buildings, objects and people.

[a] The field strengths of stationary transmitters, such as base stations for cellular/wireless phones and terrestrial portable radio transmitters, amateur radios, AM and FM broadcasting stations, and television stations, cannot theoretically be predicted with sufficient accuracy. To assess the electromagnetic conditions associated with stationary radio transmitters, an electromagnetic inspection can be carried out on site. If the field strength measurement at the site of the autoclave's intended use, shows that the relevant standards indicated above are exceeded, the autoclave should first be checked for proper operation. If abnormalities are noted, it may be necessary to take additional measures such as turning or repositioning the unit.

[b] In the frequency range from 150 kHz to 80 MHz, the field strength should not exceed 3 V/m.

RECOMMENDED DISTANCE BETWEEN PORTABLE AND MOBILE RADIO WAVE DEVICES AND STANDARD LINE AUTOCLAVE MODEL: LFSS08AA (LED), LFSS12AA (LED), LFSS18A (LED), LFSS23AA (LED)

AUTOCLAW STANDARD LINE MODEL: LFSS08AA (LED), LFSS12AA (LED), LFSS18A (LED), LFSS23AA (LED) is designed for use in an electromagnetic environment where radiated radio interference remains under control. The purchaser or user of the autoclave can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile radio communication devices (transmitters), according to the following recommendations, depending on the maximum rated output power of the communication device in question.

Maximum rated output power of the transmitter W	Spacing depending on the frequency of the transmitter (m)		
	150 kHz to 80 MHz d= $1.2\sqrt{P}$	80 MHz to 800 MHz d= $1.2\sqrt{P}$	800 MHz to 2.5 GHz d= $2.3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

The recommended spacing d in meters (m) for transmitters whose maximum rated output power is not given above can be determined using a formula specific to the frequency of the transmitter, where *P* is the maximum rated output power expressed in watts (W), according to the specifications given by its manufacturer.

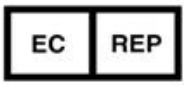
Note 1: At 80 MHz and 800 MHz, the higher frequency range is used.

Note 2: These guidelines may not apply in all situations. The propagation of electromagnetic waves is affected by their absorption and reflection by buildings, objects and people.

13. CONTACT INFORMATION



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