# INSTRUCTION MANUAL

## PREMIUM LINE AUTOCLAVE LFSS12AA (LCD)

## PREMIUM LINE AUTOCLAVE LFSS18AA (LCD)

## PREMIUM LINE AUTOCLAVE LFSS23AA (LCD)

**Model: LFSS12AA (LCD)**

**Model: LFSS18AA (LCD); LFSS23AA (LCD)**

**IMPORTER W POLSCE**

**IMPORTER AND AUTHORIZED SERVICE POINT IN POLAND**
**ACTIVESHOP SP. Z O.O.**
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CE 0123

**Before using the device, the user is required to read this manual carefully. The manual is provided to inform you about the proper use of the autoclave. Use the device in accordance with all the information contained in this manual to ensure proper operation of the autoclave.**

**The device should only be operated by qualified personnel who have the knowledge and proper training to operate this type of equipment. A suitable person should be designated to operate and maintain the device.**

**HISTORY OF CHANGES IN THE MANUAL**

| Changed item (Chapter) | Changed content | Date of introduction Changes | Number and date of issue of instructions | Notes |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**INFORMATION ABOUT THE DEVICE**

| | |
|---|---|
| Trade name (model): | |
| Description: | Autoclave Class B |
| Serial Number (SN): (see nameplate on the device) | |

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**Do not use the autoclave in a manner other than that specified (intended) by the manufacturer. Use the device only in accordance with the information contained in this manual. Do not use the device using another manual. Make sure that the manual supplied with the device is the latest available version. The latest current version of the manual is available from the manufacturer or importer of the device. If you need the current manual, please contact your sales representative or the importer's service department.**

**SCOPE OF USE OF THE MANUAL**

This manual applies to the following models of the device: LFSS12AA (LCD), LFSS18AA (LCD), LFSS23AA (LCD).

**IMPORTANT SAFETY INFORMATION**

- Before using the device, please read this manual carefully.
- Use the device according to the information in this manual and its labeling.
- Keep the manual so that you can use it again.
- If you experience any problems with the device, contact the manufacturer or your dealer.
- 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.

**EXPLANATION OF SYMBOLS USED IN PRODUCT LABELING**

| | | | |
|---|---|---|---|
| | Caution, warning, important information. Information not included on the packaging/label. | CE 0123 | CE mark with 4-digit number of Notified Body (symbol indicating compliance of the device with the requirements of Directive 93/43/EEC. |
| | Type I grounded device. | | Caution: hot surface. |
| | Before using, read the instruction manual. | | Dispose of the device in accordance with the requirements of Directive 2012/19/EC. Dispose of the used device to the treatment facilities for waste electrical and electronic equipment, in accordance with the applicable local regulations in this regard. |
| | Manufacturer. | EC REP | Authorized representative in the European Union. |
| | Date of manufacture. | SN | Serial number. |
| 40 °C 5 °C | Permissible temperature range: +5°C~ +40°C. | | Store in a dry place. |
| 80% | Humidity range (relative humidity≤ 80%). | | Range of storage height (stacked maximum 3 pieces). |

| | | | |
|---|---|---|---|
| | Do not roll. | | The way to arrange the device during transport: Top, do not invert. Bottom up. |

**WARNINGS AND IMPORTANT SAFETY INFORMATION**

**Read the following warnings and information carefully. Ignoring or disregarding these warnings may lead to: electric shock, fire, damage to the device, or damage to property.**

1. Always connect the device to a triple grounded electrical outlet. Each time before connecting the device, make sure that the outlet with a grounding pin is properly installed. Do not place the autoclave in such a place where access to the electrical outlet will be difficult.
2. Always connect the appliance to the electrical voltage indicated in this manual and on the appliance nameplate.
3. Do not touch the socket and plug with wet or damp hands.
4. Do not pull, alter, bend, coil or twist the power cord. Do not place any objects on the cord.
5. Do not place the autoclave on an unstable or uneven surface.
6. Do not block the autoclave's door, ventilation openings and the openings and spaces of the refrigeration elements.
7. Do not place any objects in front of or on the unit.
8. If any unpleasant odor is smelled or an abnormal sound is heard (a sound different from that heard when the unit is in operation), immediately disconnect the unit from the power source and contact the manufacturer or your dealer.
9. If the autoclave will not be used for a long period of time, unplug the device from the power source and store in a dry and cool room.
10. 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.
11. 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.

**Only distilled water should be used for the autoclave. The use of other water may lead to damage to the device.**
**Change the water more often than 7 days! Clean the tank for clean and dirty (used) water more often than 7 days!**

## 1. BRIEF INTRODUCTION

This device is an automatic steam sterilizer, which is very easy to operate. The parameters and conditions of the set program will be automatically shown on the digital display while the sterilization process is in progress. If any abnormal situation or malfunction occurs during operation, the device will automatically raise an alarm. If the temperature is too high or the pressure is too high, the autoclave will cut off the power supply to ensure the safety of its operator. Inside the autoclave there is a tank for condensing water, which ensures proper cleanliness inside the whole system and prevents steam from escaping to the outside.

## 2. SCOPE OF USE (APPLICATION OF THE DEVICE)

This device is intended for use only by physicians or other professionals with the knowledge or professional experience to operate this type of equipment. The autoclave can be used for medical applications, such as in doctors' offices, dentists' offices, for sterilization of equipment intended for personal hygiene, in beauty salons, as well as in veterinary offices.

The autoclave can also be used to sterilize tools and equipment that come into contact with blood and body fluids, such as items used in beauty salons, tattoo parlors, body piercing or hairdressing salons.

| Type of this device | |
|---|---|
| **Type** | **Description of purpose** |
| **B** | Sterilization of all packaged and unpackaged, uniform, indented type A objects and porous products in accordance with classification materials presented in standard EN 13060:2004+A2:2010. |

**The device is not designed to sterilize liquids. Do not sterilize liquids!**

## 3. DEVICE PARAMETERS AND STERILIZATION PROGRAMS

### 3.1. DEVICE PARAMETERS

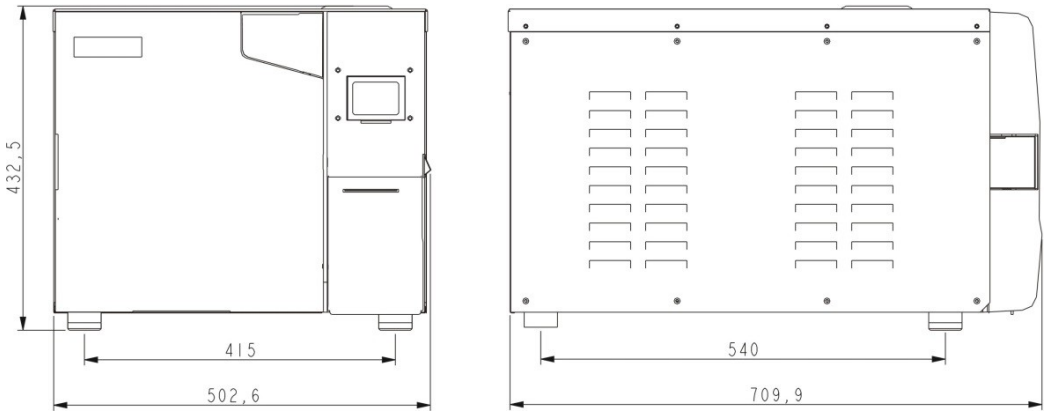
**Operating conditions of the autoclave:**

- Ambient temperature: +5°C ~ +40°C.
- Relative humidity: ≤80%.
- Atmospheric pressure: >70 kPa.
- Voltage and power rating: AC 230 V, 50/60 Hz, 1950 W.
- Highest permissible working pressure: 0.21~ 0.24 MPa (210 kPa~ 240 kPa).
- Highest permissible working temperature: 134°C~ 137°C.

**Transport and storage conditions:**

- Ambient temperature: +5°C~ +40°C.
- Relative humidity: ≤80%.
- Store away from the presence of corrosive gases and vapors.

**Dimensions of the autoclave:**




| | Commercial Name/Model | Net weight |
|---|---|---|
| **Net weight of the unit** | **PREMIUM LINE AUTOCLAVE LFSS12AA (LCD)** | **47.70 kg** |
| | **PREMIUM LINE AUTOCLAVE LFSS18AA (LCD)** | **50,25 kg** |
| | **PREMIUM LINE AUTOCLAVE LFSS23AA (LCD)** | **53,50 kg** |

### 3.2. STERILIZATION PROGRAMS

| Program | Times (times of generation) of vacuum | Sterilization time | Sterilization temperature | Sterilization pressure | Vacuum time | Drying time |
|---|---|---|---|---|---|---|
| 121°C UNIFORM (121°C SOLID) | 1*) | 20 min*) | 121°C | 110 kPa | ——— | 3 min*) |
| 121°C POROUS | 3*) | 20 min*) | 121°C | 110 kPa | ——— | 7 min*) |
| 121°C HOLLOW (121°C HOLLOW) | 3*) | 20 min*) | 121°C | 110 kPa | ——— | 10 min*) |
| 134°C UNIFORM (134°C SOLID) | 1*) | 4 min*) | 134°C | 210 kPa | ——— | 3 min*) |
| 134°C POROUS | 3*) | 4 min*) | 134°C | 210 kPa | ——— | 7 min*) |
| 134°C HOLLOW (134°C HOLLOW) | 3*) | 4 min*) | 134°C | 210 kPa | ——— | 10 min*) |
| DEFINED (USER DEFINED) | 3*) | 5 min*) | 134°C | 210 kPa | ——— | 10 min*) |
| B-D TEST | 3 | 4 min | 134°C | 210 kPa | ——— | 7 min |
| VACUUM TEST (VACUUM TEST) | ——— | ———— | ———— | -80 kPa | 15 min | ——— |
| CLEANING (CLEAN PROCESS) | 3 | 5 min | 105°C | 20 kPa | ——— | 10 min |
| PRIONY (PRIONEN) | 3 | 19 min | 135°C | 210 kPa | ——— | 10 min |
| *)Values marked *)can be individually set. | | | | | | |

**B-D TEST: The display shows 4 minutes, but usually the leakage test takes about 3.5 minutes.**

## 4. CONTROL PANEL

### 4.1. LCD DISPLAY

#### 4.1.1. ■P/ON: DISPLAYS THE STATUS OF THE PRINTER

Setup (configuration) menu for the printer:

➢ "ADV→ Printer: ON/OFF".
("ADV→ Printer: ON/OFF").

- "ON" ("ON"): The printer will be on.
- "OFF" ("OFF"): The printer will be off.

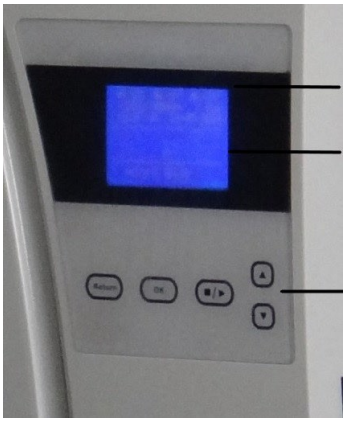



**Image 4.1**

**4.1.2. ■K/OFF: DISPLAYS THE STATUS OF THE KEEP TEMP FUNCTION.**

Function setting menu:

- "ZAAW→ KEEP TEMP: ON/OFF" ("ADV→ KEEP TEMP: ON/OFF").

− "ON" ("ON"): Function on. The autoclave heats up the chamber and runs the steam generator to maintain the temperature. If the door is open, the autoclave will stop heating the chamber and running the steam generator. The longest possible temperature maintenance time is about 8 hours. This function allows you to reduce the execution time of the next cycle.

− "OFF" ("OFF"): function turned off.

− This function can be set in the menu: "ADV→ KEEP TEMP: ON/OFF" ("ADV→ KEEP TEMP: ON/OFF").

**4.1.3. ■ ON/OFF (W/OFF): DISPLAYS THE STATUS OF THE PREHEATING FUNCTION**

Function setting menu:

- "ZAAW→ PREHEAT: ON/OFF" ("ADV→ PREHEAT:ON/OFF"):

− "ON" ("ON"): Function on. In this situation, even if the user starts the sterilization program, the next stage of the process will not be started until the temperature in the autoclave chamber reaches 50°C.

− This function can be set in the menu: "ON→ PREHEAT: ON/OFF" ("ADV→ PREHEAT:ON/OFF").

**NOTES:** **If the time of the entire sterilization cycle is to be very long, the user can enable the "PREHEAT/PREHEAT" function (■W/ON). Before activating this function, always check and observe the local regulations for the required parameters of the sterilization process.**

**4.1.4. COUNT: COUNTER OF RUNNING PROGRAMS**

Counter - allows you to count the number of running programs, for example: 00023 means that there have been run 23 programs (cycles). Not included (not counted) are: Vacuum test and B-D TEST.

**4.1.5. 2 kPa (2 Kpa) - chamber pressure status.**

Indicates that the chamber pressure is 2 kPa. If the autoclave door is opened, it means that the chamber pressure is the same as the local air pressure.

**4.1.6. 14:09:00: TIME**

User can set the time (hh:mm:ss) in the menu: "ZAAW→ DATE/TIME" ("ADV→ DATE/TIME").

**4.1.7. 26-11-2011: DATE (DATE)**

The user can set the date (dd-mm-yyyy) in the menu: "ZAAW→ DATE/TIME" ("ADV→ DATA/TIME").

**4.1.8. PROGR MENU (USER MENU) - USER PROGRAMS**

All sterilization programs are available in the menu: "PROGR MENU" ("USER MENU"). The user can select the appropriate program using this menu.

**4.1.9. ZAAW (ADV) - ADVANCED MENU**

Advanced menu function: "zaaw" ("ADV"), in this menu the user can change the option/function and can set the corresponding/appropriate parameter.

**4.1.10. SERV (SERV) - SERVICE MENU**

Service menu "SERW" ("SERV") is for service purposes only. A password is required to activate it. Only an employee of a warranty and post-warranty service company authorized by the manufacturer may use this menu. Do not change any parameters in this menu yourself, without the approval of the professional service of the authorized service provider.

**4.1.11. 134°C UNIFORM (134° SOLID) - SHORTCUT FUNCTION (CURRENT STERILIZATION PROGRAM).**

This function allows the user to remember the last sterilization program. The user does not have to go to the settings in the user menu to select the same program again.

**4.2. INTRODUCTION TO THE USER MENU ("USER MENU")**

There are 11 sterilization programs available in the "PROGR MENU" ("MENU USER") menu for the user to select:

- 121°C - program and 134°C - program - there are no significant differences in sterilization results using these programs. If the sterilization load cannot be sterilized at 134°C, choose the 121°C program.

- SOLID (solid) - using this program, you can sterilize unwrapped solid (solid) instruments such as pliers, forceps, etc.
- POROUS - porous products can be sterilized with this program.
- HOLLOW (concave) with this program you can sterilize hollow type A and type B items.

**Image 4.2**

**Image no. 4.3**

- DEFINED (USER DEFINE) - User defined programs. All program parameters can be adjusted accordingly, i.e.: temperature, sterilization time, drying time, vacuum generation multiplication rate.
- B-D TEST - Used to evaluate the sterilization efficiency of type A hollow charges. B-D TEST and Helix test are the same type of test. The difference between the two is that for the B-D TEST, a ready-made Bowie Dick type test package is used. On the other hand, for the Helix test, a "batch control test" is needed (it is evaluated using a process test instrument - PCD).
- Vacuum test (VACUUM TEST) is a leakage test.

**It is recommended to perform a vacuum test every month. The autoclave cannot be used if the final result of the test performed, is displayed in the form of an error message "FAIL".**

- Cleaning program (CLEAN PROGRAM) - designed to clean the autoclave. If the display reads: NEED CLEAN, run this program.
- Prion (PRIONEN) program: program designed to inactivate prions.

## 4.3. MENU DESCRIPTION: ZAAW (ADV MENU)

**Image no. 4.4**

**Image no. 4.5**

- Cursor - m a r k ▶

  If the cursor is at the height of the selected position, press the "OK" button to set or change the corresponding parameter of this function.

### 4.3.1. FUNCTION KEEP TEMP. ("KEEP TEMP")

The temperature maintenance function **"Keep temp." ("KEEP TEMP")** is shown in the 1st position on the display as **"■K".**

- "ON" ("ON"): Function on. The appliance will start heating the chamber and steam generator to maintain the set temperature. If the door is open the temperature holding function will be stopped.

The longest possible temperature hold time is about 8 hours. This function allows you to reduce the time of the next cycle.

- "OFF" ("OFF"): Off function. The appliance will not start warming up the chamber and steam generator.

**4.3.2. PRINTER**

- "ON" ("ON"): Function enabled. The parameters of the ongoing sterilization process will be printed.
- "OFF" ("OFF"): Function disabled. The parameters of the conducted sterilization process will not be printed out.

**4.3.3. LANGUAGE**

The following language versions can be set:

✓ ENG: English language.
✓ POL: Polish language.

**4.3.4. CUSTOM USER MENU CONFIGURATION ("USER DEFINE")**

➢ All available programs sterilization are available in this menu. This function allows you to set the appropriate cycle parameters selected by the user. Move the cursor to the height of the option "OWNER" ("USER DEFINE"), then press the button "OK" and select the appropriate parameter.

➢ If this function is enabled, using the buttons "UP" or "DOWN", move the cursor on the display to the corresponding description to change its parameter. Press "OK" to proceed to the next settings.

**Image No. 4.6**

Using the "OWNER" menu, you can set the following parameters:

➢ Vacuum times (generation times) ("VACUUM TIMES").
This function is used to set the appropriate amount (times) of vacuum generation during the sterilization process.

✓ "04": in the "OWNER" settings, the number 04: means that the user-defined program is set to produce vacuum 4 times.

✓ The user can set the times (times of generation) of vacuum from 1 to 10.

➢ "Sterilization temperature" ("STER TEMP").
This function is used to set the sterilization temperature.

✓ "134°C": in "OWNER" settings, this number means that the user-defined sterilization temperature is 134°C.

✓ The user can set the sterilization temperature from 105°C to 134°C.

➢ "Sterilization time" ("STER TIME").
This function is used to set the sterilization time.

✓ "05Min": in "OWNER" settings, this number means that the user-defined sterilization time is 5 minutes.

✓ The user can set the sterilization time from 4 to 60 minutes.

➢ "Drying time" ("DRY TIME").
This function is used to set the drying time.

✓ "10Min": in "OWNER" settings, this number means that the user-defined drying time is 10 minutes.

✓ The user can set the drying time from 4 to 60 minutes.

➢ OK.
The "OK" button allows you to save the settings and return to the previous page.

**4.3.5. STERILIZATION PARAMETERS ADJUSTMENT**

The parameters of the sterilization process can be adjusted accordingly in the menu: "ADJUST PARAM.STERIL." ("ADJUST STER PAR.")

➢ If the cursor is at the height of this menu, press the "OK" button to change the parameters of the of the selected program. The selected parameters can be changed accordingly for 6 programs (see Image No. 4.7).

- For example: In the menu: "Adjust PARAM.STERL." ("ADJUST STER TEMP."), you can select the program "134°C uniform" (see Image No. 4.8) to adjust its parameters. The 3 parameters of the program, such as sterilization time, vacuum number and drying time, can be adjusted accordingly. The corresponding parameters should be set analogously to setting the parameters in the "OWNER" program. - User-defined programs (see section 4.3.4).

**Image No. 4.7**

**Image no. 4.8**

- **DEFAULT: RETURN TO DEFAULT SETTINGS**
  Move the cursor to the "DEFAULT" ("HOME") option, then press "OK" and the "UP" button to restore the default settings.

### 4.3.6. PASSWORD

- If the user sets a password and approves "ACTIVE: ON", ("ENABLED: ON"), the autoclave will only start up if the correct password is entered. The autoclave will not start up if an incorrect password is entered.
- In case of forgetting the password, contact the manufacturer or the device dealer.
- If the cursor is is is is is high "PASSWORD" ("USER PASSWORD") in the advanced menu option: "ZAAW" ("ADV"), press "OK" to go to the next page (see Image No. 4.9).

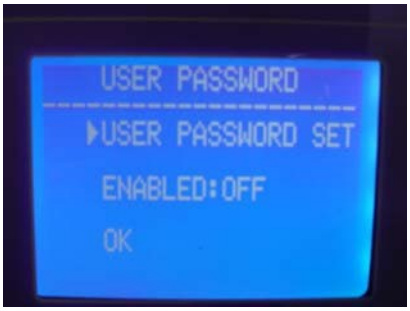



**Image No. 4.9**

- SETTING THE USER PASSWORD
  If the cursor is at the height of the "SET PASSWORD" ("USER PASSWORD SET") option, press "OK" to move to the next page (see Image No. 4.10).
  Using the "UP" and "DOWN" button, set the appropriate password.
  - ✓ Using the "UP" button - it is possible to set the corresponding value by +1 degree (up).
  - ✓ Using the "DOWN" button - it is possible to set the corresponding value by 1 degree (down).

  Press the "START/STOP" button to move the cursor. At the height of "ACTIVE" ("ENABLED"), select:
  - "ON" ("ON") to enable the password.
  - "OFF" ("OFF") to disable the password.
  - "OK" to return to the previous page.

**Image no. 4.10**

### 4.3.7. DATE/TIME

If the cursor is at the height of the "DATE/TIME SET" option ("DATE/TIME SET"), press "OK" to go to the next page.

Set the appropriate date using the "UP" or "DOWN" buttons (see image no. 4.11):

✓ Using the "UP" button - it is possible to set the corresponding value by +1 degree (up). the

corresponding value by -1 degree ( down).

**Image no. 4.11**

Press the "START/STOP" button to move the cursor. Set the corresponding time in the same way.

### 4.3.8. SOUNDS

If the cursor is at the height of the "Sounds" ("KEY SOUND") option, press "OK" to turn the sound on or off "ON" ("ON") or "OFF" ("OFF"):

- "ON" ("ON"): Sound on.
- "OFF" ("OFF"): Sound off.

### 4.3.9. PREHEAT

If the cursor is at the height of the option "■W" - "Preheat" ("PREHEAT"), press "OK" to enable or disable "ON" ("ON") or "OFF" ("OFF"):

- "ON" ("ON"): Function on. Even if the sterilization program is turned on, the autoclave will not pass the to the next stage until the temperature in the sterilizer chamber does not reach 50°C.
- "OFF" ("OFF"): Off function. When the sterilization program is activated, the autoclave will proceed to the next stage regardless of the temperature in the chamber (the cycle will be started regardless of whether the temperature in the chamber reaches 50°C).

### 4.3.10. AUTO START

The user can select the "delayed start" function, which will enable the autoclave to start the corresponding program automatically at a pre-set time. If the cursor is at the height of the "AUTO START" option, press "OK" to use this function.

After pressing "OK", you can set the appropriate time at which the autoclave will automatically start the corresponding program. The delayed start function can be set in 2 ways (see image no. 4.12):

✓ "DATE/TIME" ("DATE TIME"): Possible to set the exact time (date and time) of automatic start of the autoclave.

✓ HOURS LATER ("XX h later"/"XX HOUR LATER"): Setting the appropriate time, the so-called "delayed start", after which the device will automatically start.

**Image no. 4.12**

**Image no. 4.13**

**Image no. 4.14**

Press the "UP" or "DOWN" button to set the appropriate date and time (see images No. 4.13 and No. 4.14):

✓ Using the "UP" button - it is possible to set the corresponding value by +1 degree (up).

✓ Using the "DOWN" button - it is possible to set the corresponding value by -1 degree (down). Press the "OK" button to change the position of the highlighted digit.

After setting the appropriate time and date of the AUTO START function, it is essential to select the appropriate program (see image No. 4.15), then press "OK". W this moment will be started countdown.

After the specified time has elapsed, the device will automatically start the program for which the AUTO START function has been activated (see image No. 4.16 and No. 4.17).

Image no. 4.15

Image no. 4.16

Image no. 4.17

In this device you can set 3 types (degrees of drying), i.e. I-, II- or III- degree. If after the cycle, the sterilized products are wet, you can increase the type of drying and select one higher degree, i.e. II- or III- degree. The drying temperature during the implementation of II- and I I I - d e g r e e is higher than that of I-degree drying. When using the II- and III-drying stage, it is possible to significantly reduce the useful life/life of the machine. Press "OK" to set the appropriate drying stage.

## 4.4. BUTTONS

### 4.4.1. "UP" BUTTON

Allows you to move "up" or "left".

### 4.4.2. "DOWN" BUTTON

Allows you to move "down" or "right".

### 4.4.3. "BACK" BUTTON

Allows you to return to the previous menu.

### 4.4.4. "OK" BUTTON

Allows you to confirm or move to the next menu.

### 4.4.5. "START/STOP" BUTTON

When the program i s approved, the display will show: "please push the start..." ("please push the start key to start..."), press the "START/STOP" button to start the program.

While the sterilization cycle is running, the user can press the "START/STOP" button and hold it for 5 seconds to stop the whole cycle running.

# 5. INSTALLATION OF THE DEVICE

The autoclave is packed in a wooden box. Using a flat screwdriver, open the lid of the crate, and then remove the device using ropes (images 5.1 and 5.2). The participation of 2 people is required to remove the autoclave from the crate. Failure to do so may result in damage to the device or property.

Image No. 5.1

Image No. 5.2

### 5.1. SETTING UP THE DEVICE

Place the autoclave on an even stable surface, e.g. on a table, in such a place where it is possible to provide at least 10 cm of free space at the front and sides of the device, as well as to provide at least 20 cm above and from the back of the device.

Place the autoclave in a well-ventilated room. Do not block and/or obstruct the cooler of the unit.

**Place the autoclave in a horizontal (horizontal) position, on a level stable table. Make sure that the table intended for placing the autoclave is stable and its structure can withstand the load (weight) of the device.**

### 5.2. PRESSURE REGULATION

Since the value of atmospheric pressure is different in different regions, so before using the device for the first time, adjust the pressure value.

How to adjust the pressure:

✓ Turn off the power supply.
✓ Open the door of the autoclave.
✓ Turn on the power, then wait for 20 seconds and turn off the power.
✓ The pressure in the autoclave has been automatically adjusted.

**The device may not work if the user does not adjust the pressure.**

### 5.3. SETTING THE DATE AND TIME

Set the date and time according to the guidelines outlined in Section 4.3.7 (DATE/TIME).

## 6. OPERATION

**Preparation before use**

Plug the power cord into an electrical outlet, and then turn on the autoclave. The LCD screen will start up and display the main menu. At this point, the device is ready for use. Before the first use, the display will show "Please fill water" ("Please fill water"). You will then need to fill the clean water tank, which is located at the top of the unit, with distilled water. As soon as the tank is refilled with enough water, the alarm will turn off and the device will be ready for use.

**Connect the device only to a grounded power outlet.**

### 6.1. REFILLING THE UNIT WITH WATER

If the message "Please fill water" ("Please fill water") appears on the display, it means that the water level in the clean water tank is insufficient for the next cycle. In that case, the tank should be immediately refilled with distilled water to a sufficient level before starting the next program. If, during the ongoing sterilization cycle, the message "Please fill water" appears on the display, there is no need to interrupt the ongoing program, as the water level in the tank is sufficient for the current cycle. On the other hand, before the next cycle, it is necessary to refill the clean water tank.

The process of filling the tank with distilled water, in this series of the device, is done manually (manual). The clean water tank is located in the upper part of the device. During the filling of the tank, 2 beeps will be heard:

- The first signal indicates that the water level in the tank is sufficient for one new cycle.
  At this point you can stop or continue refilling the water.
- The second signal means that the tank is full. Stop filling the tank immediately.

1. **For autoclave use only distilled water of suitable quality, so as not to cause clogging or problems (interference) in the operation of the steam generator and valves. The user is fully responsible for damage to the autoclave caused by the use of other than the required water.**
2. **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 from a horizontal position, on a stable level surface.**
3. **Each time you fill the clean water tank, you must also empty the dirty (used) water tank.**
4. **Do not tilt, turn or move the unit if the clean and dirty water tanks are full.**

### 6.2. RECORDING THE RESULTS

The result of the conducted sterilization cycle can be saved on a data carrier (flash memory - a flash drive type device).

### 6.3. COURSE OF OPERATION OF THE DEVICE

If there is enough water in the clean water tank, and the dirty (used) water tank is not overfilled, then the autoclave is ready for operation.

#### 6.3.1. PLACING THE LOAD IN THE CHAMBER

Place in the chamber, the load to be sterilized according to the following guidelines:

1. **Make sure that the total volume (of the inserted items ( expressed in $m^3$) is less than 70% of the chamber volume (expressed in $m^3$). Always adhere to the maximum weight of the load (inserted load must not exceed more than 70% of the chamber volume).**
2. **Keep a distance between the charge to be sterilized and the chamber surface and the chamber air outlet. Ensure a gap of at least 10 mm (1 cm) between the load and the inner surface of the chamber.**
3. **Place the test sheet in the center of the package to ensure that a reliable result is obtained from the "B-D TEST" test performed.**
4. **Take special care when inserting and removing the sterilized items to avoid burning. For this purpose, always use a special handle (handle) for removing the charge due to its high temperature.**

**Image 6.1**

### 6.3.2. PARAMETER SETTING

If necessary, set the appropriate function parameters:

- "Keep temp."/"KEEP TEMP" function (see section 4.3.1),
- Printing function "Printer"/"PRINTER" (see section 4.3.2)
- heating function "Preheat"/"Preheat" (see section 4.3.9).

### 6.3.3. CLOSING THE AUTOCLAVE DOOR

If the autoclave door is not closed properly, the display will show the message: "Close the door"/ "Please close the door".

**If there will be high temperature and pressure inside the chamber, it may be difficult to close the door properly. You should then quickly close the door or wait a moment (30 seconds) and only then, try to close the door again.**

### 6.3.4. SELECT THE STERILIZATION PROGRAM AND START OPERATION

After closing the door, select the correct program depending on the type of load in the chamber. All sterilization programs are located in the option: "PROGR" ("USER MENU"). Using the "UP" or "DOWN" buttons, move the cursor to the height of the option: "PROGR" ("USER MENU"), and then press "OK" to enter the menu. Inside the menu, use the "UP" or "DOWN" buttons to select the appropriate sterilization program. The selection of the program, should be confirmed by pressing "OK".

Then the display will show "Press start to start" ("please push the start key to start")

and you can then press the "START/STOP" button to start the selected program.

The entire sterilization cycle will be automatically completed. The time of the full cycle depends on: the initial temperature in the chamber, the type of load and the set program.

When the cycle is complete, the "End"/"END" message will appear on the display and 3 beeps will be heard. You can then open the door and remove the load from the chamber very carefully.

### 6.3.5. TURNING OFF THE DEVICE

When the sterilization process is complete, turn off the autoclave. If the device will not be used for a long time, also remove the power cord from the electrical outlet.

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

**After the sterilization process is complete, to avoid burns, always use a special handle (handle) to remove trays with sterilized items from the chamber.**
**Do not open the door as long as the chamber pressure is "-0.5~ 0.5".**

**During daily use, use sterilization indicators (sheets, strips, test strips or indicator bags) that are designed to be placed with the load inside the sterilizer chamber. These indicators will enable control of the sterilization process.**

### 6.3.6. OVERFILLED DIRTY (USED) WATER TANK

If the message "PLEASE DRAIN WATER FROM WASTER WATER TANK!" appears on the display, it means that the dirty (used) water tank must be emptied. because it is full.

**Be very careful when emptying the dirty (used) water tank to avoid getting burned because the drained water is very hot.**

## 7. ABNORMAL SITUATIONS

If abnormal and/or abnormal situations for normal operation of the autoclave occur during operation, in this situation, to ensure the safety of the user, an alarm will automatically sound, the pressure will be lowered and the heating will be turned off. The display will show the corresponding error message (see the following tables for an explanation of error messages).

In case, when the alarm turns on, save the displayed error code and turn off power. Do not open the door. Then turn the power back on and wait for a while until the pressure returns to "-0.5 ~ 0.5".

**If an error occurs, it is recommended to restart the program to see if the error recurs.**

Below is a list of error messages. If it is not possible to solve the problem by yourself according to the information shown in the table below, contact the manufacturer or your device dealer as soon as possible to solve the problem.

| L.p. | Code Error code | Sound | Current state | Cause | Possible solutions |
|---|---|---|---|---|---|
| 1. | E31 | Long signal | The temperature in the chamber is >150°C. | Steam generator sensor is not working properly. | Check the temperature sensor in the chamber. |
| 2. | E32 | Long signal | The temperature of the heater in the chamber is >280°C. | The steam generator sensor is not working properly. | Check the temperature sensor of the heater in the chamber. |
| 3. | E51 | Long signal | The temperature in the chamber is ≤ 0 ° C . | The steam generator sensor is not working properly. The temperature in the chamber is too low. | Check the temperature sensor in the chamber. Check the room temperature. |
| 4. | E52 | Long signal | The temperature of the heater in the chamber is ≤0°C. | The steam generator sensor is not working properly. The chamber temperature is too low. | Check the temperature sensor in the chamber. Check the room temperature. |
| 5. | E63 | Long signal | 1. The temperature of the steam generator is ≤0°C; 2. Steam generator temperature is >230°C. | Steam generator temperature is >230°C; Unstable steam temperature control system, more than 230°C; Temperature sensor Steam generator temperature sensor is defective. | Check the steam generator and its sensor. Check the control board. |
| 6. | E2 | Long signal | The sterilization pressure is 40 kPa higher than the intended pressure (134°C program:210kPa/ 121°C program: 110 kPa). | The vacuum pump is defective. | Check the vacuum pump. Perform a leakage test (Vacuum test). |
| 7. | E61 | Long signal | Program 134°C: internal temperature is >140°C or Program: 121°C internal temperature is >127°C; Unstable temperature control system. temperature. | The temperature sensor in the chamber is defective. | Check the chamber temperature sensor. |
| 8. | E62 | Long signal | Heater temperature is >155°C; Unstable temperature control system; Control board Is defective. | The temperature sensor is defective. The board The control board is defective. | Check the temperature sensor. Check the steam generator heater and sensor. Check the control board. |
| 9. | E41 | Long signal | After 8 minutes of heating, the heater temperature is <100°C; the heater circuit is defective. | The heater in the chamber is defective. | Check the heater. |

| L.p. | Code Error code | Sound | Current condition | Cause | Possible solutions |
|---|---|---|---|---|---|
| 10. | E42 | Long signal | After 8 minutes of heating, the temperature of the steam generator is <110°C; The heater (heating rod) is defective. | The heater in the chamber is defective. | Check the heating rod. |
| 11. | E5 | Long signal | At the end of the sterilization process, after 10 minutes of pressure release, the chamber pressure is still at a level higher than 0.5 bar; Incorrect air discharge/Air output valve Is defective. | The outlet of the solenoid valve is blocked. | Check the water discharge valve. |
| 12. | E6 | Long signal | The door is open while the unit is operating The appliance; The door sensor is defective. | The door sensor is defective. | Check the door sensor. |
| 13. | E7 | Long signal | Local air pressure is <70kPa | Local air pressure is too low. Inappropriate air pressure. | Local pressure is inappropriate for the operation of the unit, the unit cannot be used under these conditions. Adjust the pressure (see section 5.2). |
| 14. | E8 | Long signal | During vacuum generation, the temperature increases by <3°C, every 5 min. Temperature rise too fast. | Leakage - air penetration. No water in the tank. | Check the water pump. Check the heating rod. Check the control board. Check the water level in the tank. |
| 15. | E9 | Long signal | During sterilization, the pressure is -0.3 bar lower than the intended pressure. | No water in the tank. The steam generator heater is defective. The water pump (pump for water) is defective. | Check the heater, water pump and water level in the tank. |
| 16. | E10 | Long signal | Electric lock Is in inadequate (bad) condition. | The electric lock is defective. The control board is damaged. | Check the electric lock. Check the control board. |
| 17. | E11 | Long signal | The electric lock Is in inadequate (bad) condition. | The electric lock is defective. The control board is damaged. | Check the electric lock. Check the control board. |
| 18. | E12 | Long signal | During the running program, the vacuum does not reach -70kPa; 2-fold vacuum generation instead of the required 3 times. | The vacuum pump is defective. The fan is defective. | Check the vacuum pump. |
| 19. | E99 | Long signal | Communication error (incorrect Communication) between the CPU module. | Connection disconnected. Communication lost between the CPU module. | Check the motherboard. Check the C P U / p r o c e s s o r installation. |

## 8. MAINTENANCE

The following parts must be checked and replaced regularly:

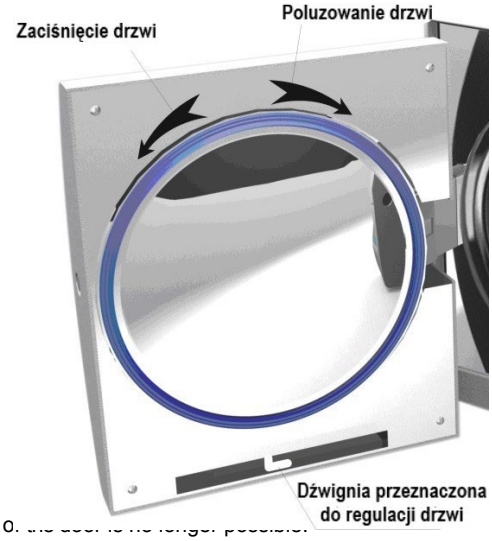
- Bacteriological filter (see section 8.5).
- Door seal (see sections 8.7 and 8.8).
- Safety valve (see section 8.9).

List of parts to be checked:

| Element: | Realized by: | Period: | Method Maintenance: |
|---|---|---|---|
| **Doors** | An employee of the company providing service<br>Warranty and post-warranty. | Every 2 years. | See section 8.1. |
| **Door seal** | User. | Every 1 year. | See section 8.5. |
| **Fuse** | Employee of the company providing warranty and post-warranty service. | Immediately,<br>If the fuse is damaged. | See section 8.6. |
| **Printer paper** | User. | Immediately if the runs out of paper. | See section 8.2. |
| **Safety valve** | An employee of the company providing service<br>Warranty and post-warranty service. | Every 1 year. | See section 8.9. |

## 8.1. DOOR ADJUSTMENT AND LEAKAGE CHECK

Pull lever and turn the door to adjust its tightness. Pull the lever down first. 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).




Detailed description of the adjustment steps:

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

1. **After adjusting the door, it is essential to perform a leakage test (vacuum test). If the unit is leaking, adjust the door correctly once again.**
2. **The seal may break (explode) if the door is too loose! Be careful when adjusting the door, and make sure the door is properly and well adjusted!**

## 8.2. PRINTER PAPER REPLACEMENT

**Replacing the paper in the printer:**

Press the "Open/Open" button to open the printer door cover and replace the paper roll. Then close the door and put a sheet of paper on it (See images No. 8.2, 8.3 and 8.4).

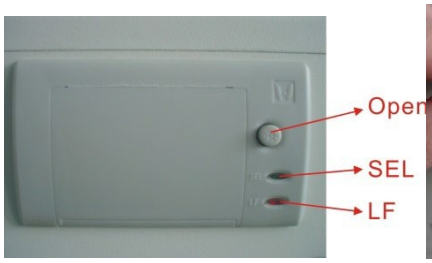



Image No. 8.2

Image No. 8.3

Image No. 8.4

**Checking that the paper is correctly placed on the feeder:**

Press the "LF" indicator so that the printer can retrieve 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 over to the other side).

**Only one-sided printing 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.

## 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.

**Do not use a wire brush, steel, wool or abrasive materials, or agents containing chlorine compounds to clean the door, its seal and chamber. 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 (after 150 cycles performed).

## 8.6. REPLACEMENT OF THE FUSE

1. Disconnect the device from the power source.
2. Remove the screws to the left (counterclockwise) with a blunt-tipped screwdriver and then remove the fuse.
3. Replace the worn fuse with a new one and screw the screws to the right (clockwise).

**Before replacing, check that the new fuse is suitable for this type of appliance.**

## 8.7. CLEANING THE DOOR SEAL

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

## 8.8. 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. Carefully separate a certain part of the gasket from the door and only then carefully remove the entire gasket.
2. Then thoroughly clean the gasket and check for damage. If it is damaged, immediately replace the gasket with a new one.
3. After cleaning, the undamaged and clean gasket should be inserted gently into its place.

4. Note: If it is very difficult to put the gasket in its place, a screwdriver can be used in this situation. Carefully and very gently press the gasket with the screwdriver until it returns to its place.

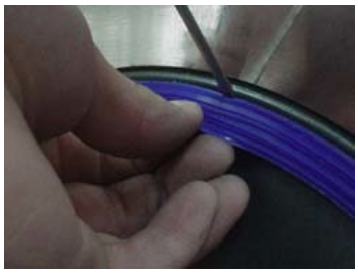


**Image No. 8.5**

**Image No. 8.6**

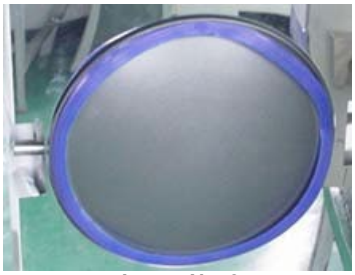


**Image No. 8.7**

1. **For cleaning and maintenance of the device, appoint a properly trained person.**
2. **Proper maintenance and upkeep of the device is ensured only by operating the autoclave by a properly trained person.**

### 8.9. CHECKING THE SAFETY VALVE

Check the safety valve regularly. If the valve is damaged, replace it with a new one immediately.

How to replace the safety valve:

1. Remove the side wall of the appliance housing. Remove the 1 part shown in image No. 8.8 with the number 1.
2. Then remove the pipe that connects the safety valve. Remove the screw shown in image No. 8.8 with the number 2.
3. Replace the old (worn out) safety valve with a new one.

**Image No. 8.8**

1. **The new safety valve must be the same (model, manufacturer, etc.) as the worn safety valve. If necessary, contact the manufacturer or your appliance dealer.**
2. **Before replacing the safety valve, turn off and unplug the autoclave, and wait for it to cool down. Replacement of the safety valve can be performed only by an authorized service worker.**

## 9. TRANSPORT AND STORAGE CONDITIONS

### 9.1. PREPARATION OF THE DEVICE

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

### 9.2. EMPTYING THE TANKS

Then all tanks must be emptied by connecting a pipe (tube) directly to the corresponding drain valve (see image No. 9.1).

The drain valve of the dirty (used) water tank is marked with the letter A in image 9.1, while the letter B is marked with the drain valve of the clean water tank.

Then, turn the connection to the left (counterclockwise) to start draining 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 device in the presence of gases, explosives, open sources of heat or flammable substances.

**Take special care not to damage the device during transportation.**

## 10. SERVICE THE DEVICE BY AUTHORIZED TECHNICIANS

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

Warranty conditions are presented in the warranty card.

## 11. ACCESSORIES

| No. | Item name (designation) | Quantity (pcs.) |
|---|---|---|
| 1. | Drain cable (LF-9-10-1). | 1 |
| 2. | Trays (see table 11.1). | 3 |
| 3. | Power cord (LF-9-12-2). | 1 |
| 4. | Tray rack (see table 11.1). | 1 |
| 5. | Tray removal handle (LF-9-12-4). | 1 |
| 6. | Fuse (Φ6X30 230V20A). | 1 |
| 7. | Operating instructions. | 1 |

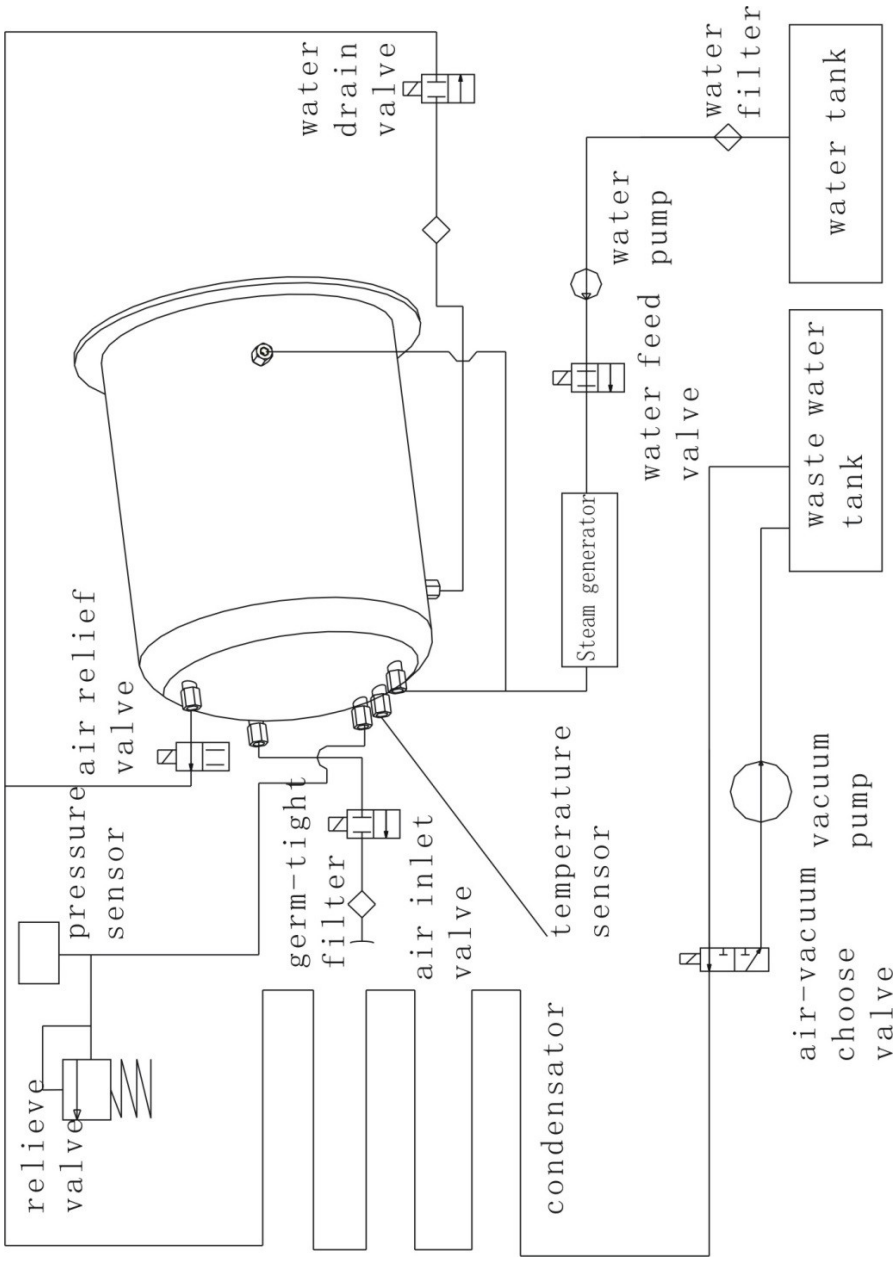
**Image No. 11.1**

**Table no. 11.1**

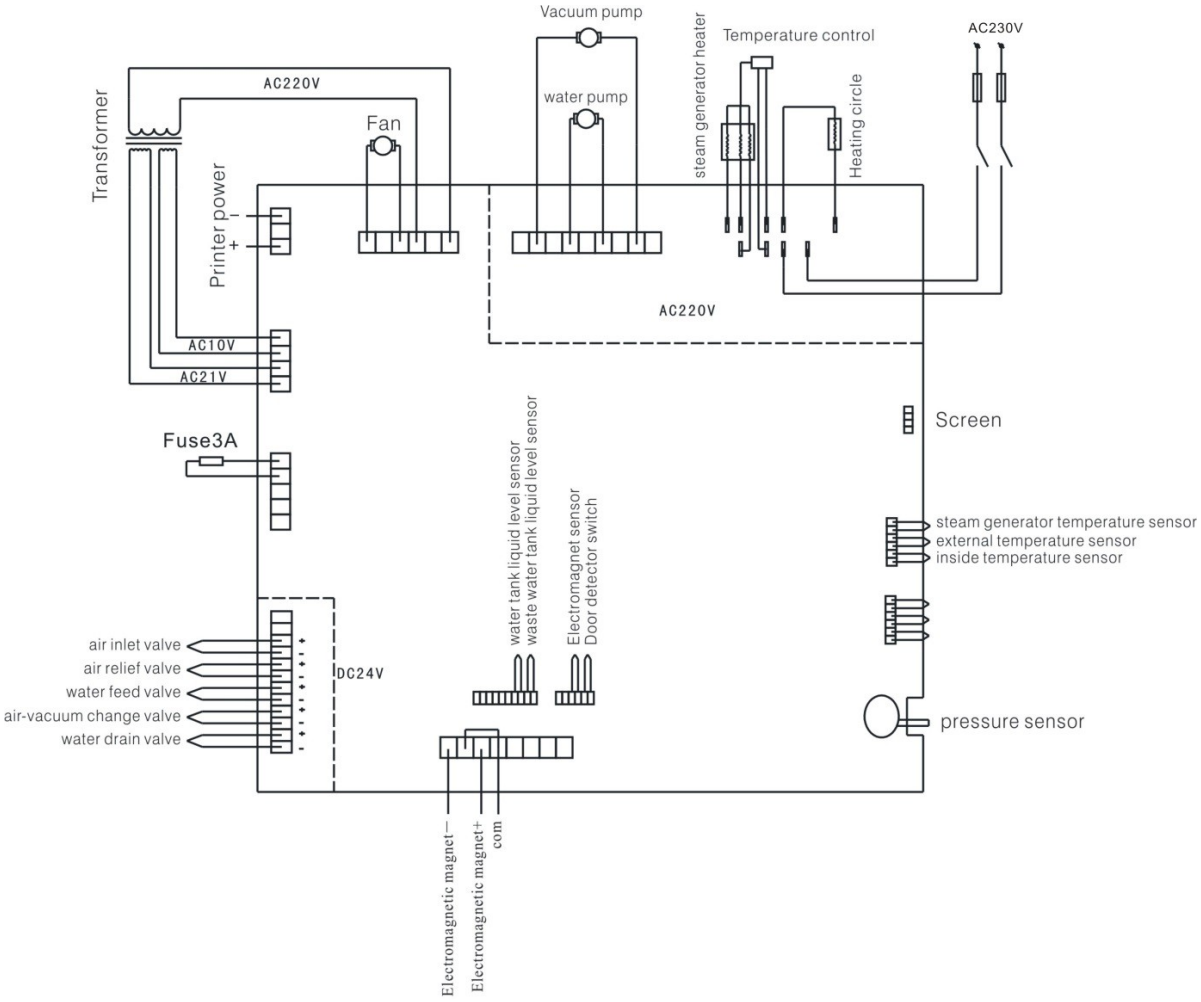
| No. | Part/Model | |
|---|---|---|
| 1. | Trays | LF-2-6-1 |
| 2. | Tray stand | LF-2-6-2 |

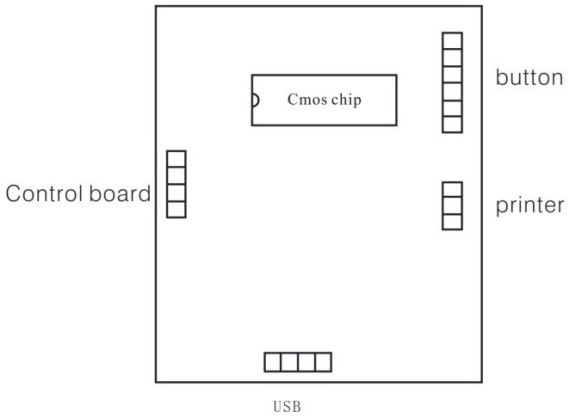
## 12. ATTACHMENTS

### 12.1. APPENDIX 1: CONSTRUCTION SCHEME



## 12.2. APPENDIX 2: ELECTRICAL CIRCUIT DIAGRAM




Vacuum pump power: AC: 230V 50Hz 70W
Water pump power: AC: 230V 50Hz 47W
Heating circle: AC: 230V 50Hz 1500W
Heating rod: AC: 230V 50Hz 750W
Electromagnetic valve: DC: 24V 5W

## 12.3. ANNEX 3: ELECTROMAGNETIC COMPATIBILITY GUIDELINES

| MANUFACTURER'S INFORMATION AND DECLARATION - ELECTROMAGNETIC EMISSION | | |
|---|---|---|
| **PREMIUM LINE AUTOCLAW LFSS12AA (LCD); LFSS18AA (LCD); LFSS23AA (LCD) is designed for operation in an environment 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 | AUTOCLAVE PREMIUM LINE LFSS12AA (LCD); LFSS18AA (LCD);<br>The LFSS23AA (LCD) uses RF (radio frequency) energy only for its internal functions. Therefore, its RF emission is very low and there is no possibility of causing interference to electronic devices in the electronic devices in the vicinity. |
| **RF emissions CISPR 11** | Class B | AUTOCLAVE PREMIUM LINE LFSS12AA (LCD); LFSS18AA (LCD);<br>LFSS23AA (LCD) is suitable for operation in all establishments, including living quarters and premises directly connected to the 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 | | | |
|---|---|---|---|
| **PREMIUM LINE AUTOCLAW LFSS12AA (LCD); LFSS18AA (LCD); LFSS23AA (LCD) is designed to operate 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 IEC 61000-4- 2** | ±6 kV (contact)<br>±8 kV (through air) | ±6 kV (contact)<br>±8 kV (through the air) | Floors should be wood, concrete or ceramic tile. If the floors are covered with synthetic material, the relative humidity in the room must be, at least 30%. |
| **Rapid electrical transients in accordance According to IEC 61000-4-4** | ±2 kV (for power lines)<br>±1 kV (for lines input/output) | ±2 kV (for power supply lines)<br>±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 in accordance w i t h IEC 61000-4-5** | ±1 kV line(s) to line<br>±2 kV line(s) to ground | ±1 kV line(s) to line<br>±2 kV line(s) to ground | The mains power supply must conform to the conditions normally found in hospital or commercial facilities. |
| **Test of 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<br>40% $U_T$ (60% $U_T$ drop) for 5 cycles<br>70% $U_T$ (30% $U_T$ decline) for 25 cycles<br><5% $U_T$ (>95% $U_T$ decline) for 5 s | <5% $U_T$ (>95% $U_T$ decline) for 0.5 cycle<br>40% $U_T$ (60% $U_T$ decline) for 5 cycles<br>70% $U_T$ (30% $U_T$ decline) for 25 cycles<br><5% $U_T$ (>95% $U_T$ decline) for 5 s | The mains power supply must correspond to the conditions normally found 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 level appropriate for standard conditions in hospital or commercial facilities. |
| Note: $U_T$ is the alternating current (AC) supply before the test level is applied. | | | |

**MANUFACTURER'S INFORMATION AND DECLARATION - ELECTROMAGNETIC IMMUNITY**

**PREMIUM LINE AUTOCLAW LFSS12AA (LCD); LFSS18AA (LCD); LFSS23AA (LCD) is designed to operate in an environment of 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 IEC 61000-4-6 radio interference** | 3 Vrms 150 kHz to 80 MHz | 3 V | Recommended distance<br>d= 1.2$\sqrt{P}$<br>d= 1.2$\sqrt{P}$ 80 MHz to 800 MHz |
| **Radiated interference IEC 61000-4-3** | 3 V/m 80 MHz to 2.5 GHz | 3 V/m | d= 2.3$\sqrt{P}$ 800 MHz to 2.5 GHz<br>, where P is the maximum rated output power of the transmitter expressed in watts (W) according to the transmitter manufacturer, and d is the recommended distance in meters (m).<br>The field strength of the installed RF transmitters, according to the electromagnetic control of the location [a)], should not exceed the compliance level in each frequency range. [b)]<br>Interference may occur in the vicinity of equipment marked with the following symbol: |

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 autoclave's target site 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 SPACING BETWEEN PORTABLE AND MOBILE DEVICES USING RADIO WAVES, AND PREMIUM LINE AUTOCLAVE LFSS12AA (LCD); LFSS18AA (LCD); LFSS23AA (LCD)**

**PREMIUM LINE AUTOCLAVE LFSS12AA (LCD); LFSS18AA (LCD); LFSS23AA (LCD) 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 in meters | | |
|---|---|---|---|
| | 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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