Thank you for choosing our steam sterilizers.

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

**IMPORTANT NOTICE:**
If you can't open the door, please unlock the door according to the instruction “How to open the door in the case of power outage” in the manual.

**Need Maintenance**

If this picture appears on the screen when power on or E88 appears on the report, please call your dealer or local service maintenance. Your steam sterilizer needs a regular maintenance.

Instructions Manual
B4000-28

Document: Version 07T10013 v2.8

Subjects to technical changes
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1. General

1.1 Scope of Manual
This manual contains information concerning the installation, operation and maintenance of the steam sterilizers. To ensure proper performance of the autoclave, the instructions given in this manual should be thoroughly understood and followed. Keep the manual near to the sterilization in a readily accessible location for future reference.

1.2 Intended Use
The sterilizer described in this manual is intended for the sterilization of laboratory research tools and media. It operates automatically with 134°C and 121°C sterilization temperatures.

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

1.4 Symbols
For safe operation, please pay close attention to the alert symbols below which can be found in the sterilizer or throughout this manual.

This symbol represents an electrical caution - ground protection.

Hot Surface
This symbol represents a warning of a potential hot surface.

Important safety information.
This symbol represents a warning for extra caution.
2. Description of the sterilizer

2.1 Sterilizer views

1. Used water tank
2. Distilled water tank
3. LCD
4. Control Panel
5. Printer (Optional)
6. Main power switch
7. USB port
8. Drain connector (Used water tank)
9. Drain connector (Distilled tank)
10. Door
11. Safety valve
12. Condenser ventilation
13. Rating plate
14. Circuit breaker
15. Power socket

2.2 Control panel

1. Date of manufacture
2. SN
3. Manufacturer Name
4. Manufacturer Address

1. Temperature of the cycle
2. Program
3. Holding time
4. Pressure
5. Fill distilled water tank
6. Drain used water tank
7. Printer is connected
8. Door is closed
9. Time
10. Current temperature
11. Up button
12. Down button
13. Start button
14. Set button
### 2.3 Technical specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber</td>
<td>( \phi 319\text{mm x 417 mm (12.5 x 16.4 in.)} )</td>
</tr>
<tr>
<td>Rated Voltage</td>
<td>220V (200V to 245V) 50/60Hz</td>
</tr>
<tr>
<td>Circuit breaker</td>
<td>F16A/400V</td>
</tr>
<tr>
<td>Nominal power</td>
<td>2100VA</td>
</tr>
<tr>
<td>Sterilization temperature</td>
<td>121°C /134°C</td>
</tr>
<tr>
<td>Capacity of the distilled water tank</td>
<td>Approx 8.0 L (Water at level Max)</td>
</tr>
<tr>
<td>Operation temperature</td>
<td>5°C-40°C</td>
</tr>
<tr>
<td>Operation relative Humidity</td>
<td>Max. 80%, non condensing</td>
</tr>
<tr>
<td>Overall dimensions</td>
<td>640mm(W)*560mm(H)*640mm(D)</td>
</tr>
<tr>
<td>Net weight</td>
<td>92 kg</td>
</tr>
<tr>
<td>Max. Noise level</td>
<td>&lt;70 dB</td>
</tr>
<tr>
<td>Atmospheric pressure</td>
<td>76 kPa – 106 kPa</td>
</tr>
</tbody>
</table>

### 2.4 Packing content

<table>
<thead>
<tr>
<th>No.</th>
<th>Accessory</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Instrument tray rack</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Draining hose</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Instructions manual</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Door seal</td>
<td>1</td>
</tr>
</tbody>
</table>
3. Installation

3.1 General conditions
Position the device on a flat and level surface with minimum capacity 60 kgs.
The sterilizer should be placed on a level worktable.
Improper water level in the chamber could cause a sterilizer malfunction.
Leave at least 10cm between the device rear part and the wall. The clearance required to open the door is 40cm.
Position the autoclave at such a height as to make it possible for the operator to check the whole sterilization chamber and carry out the normal cleaning operations.
The room where the device is installed must be enough ventilated.
Do not install the device near washing basins, taps, etc. where it is likely to be splashed.
Do not lean on the door when it is opened.
Do not place trays, papers, fluid containers, etc. on the sterilizer.

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

4 Setup
Open the door and remove all of the inner contents for unpacking.
Connect the power cord to an outlet of the appropriate voltage.
Turn on the main switch on the right side. After switching on, the machine turns on the LCD and shows the door position, water level, working program, date, time and etc.
Holding the up button for about 3 seconds, it will unlock the door.

Note: The control panel will be locked for the initial 10 seconds after powering up for system initialization.

Notice: Before using the sterilizer or at any time the low water level icon blinks, fill the distilled water tank with distilled water.
4.1 Basic Setting

The “Basic Setting” Menu permits to set the following options:
*Date  *Time  *Language

Select the “Basic Setting” from the main menu and press the “Set” button.
Select the item by pressing the “Set” button. The unit you selected will be lighted.
Adjust the value by pressing the up or down buttons. Press the “Set” button to proceed to
the next item.
After the language is set, then the data is permitted to be saved by pressing the “Set” button
until the main menu appears.

**Note:** If you want to cancel the setting and return to the main menu by pressing the “Start” button.

**Note:** The Counter (cycle No) can not be set by the operator.

Abbreviation of language options

<table>
<thead>
<tr>
<th>CHN</th>
<th>Chinese</th>
<th>ENG</th>
<th>English</th>
<th>DEU</th>
<th>German</th>
<th>ESP</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL</td>
<td>Polish</td>
<td>FR</td>
<td>French</td>
<td>HUN</td>
<td>Hungary</td>
<td>ROM</td>
<td>Romanian</td>
</tr>
<tr>
<td>NL</td>
<td>Dutch</td>
<td>LTU</td>
<td>Lithuanian</td>
<td>LAT</td>
<td>Latvian</td>
<td>CZE</td>
<td>Czech</td>
</tr>
<tr>
<td>ITA</td>
<td>Italian</td>
<td>RUS</td>
<td>Russian</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2 Fill the distilled water tank

Ensure that the drain valve is closed and open the water tank cover.

⚠️ Use only distilled water. (see Appendix 1)

4.3 Preparation of sterilization materials

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

5. Operation

5.1 Select the program

Press the “Up” button to open the main menu, select “Program”. You will see the available sterilization programs. See Appendix 2.

<table>
<thead>
<tr>
<th>Program</th>
<th>SOLID(134°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Set</td>
<td>WRAPPED(121°C)</td>
</tr>
<tr>
<td>Report</td>
<td>WRAPPED(134°C)</td>
</tr>
<tr>
<td></td>
<td>PRION(134°C)</td>
</tr>
</tbody>
</table>

Select the program by up or down buttons and confirm it by pressing the “Set” button. If you don’t want to select a program you may press the “Return” button to exit.

5.2 Running the sterilization program.

After selecting program, the instruments to be sterilized can now be placed on the tray placed inside the chamber.

5.2.1 After the instruments are loaded, you may close the door.

Push the door to be closed, holding for about three seconds, it will lock automatically.

Caution: The door can not be locked if the pressure is higher than 0 kPa. Please wait for the chamber cooling down.

5.3 Start the sterilization program.

After the “Start” button is pressed, the stage and the status of the current cycle will appear on the display. The sterilizers will perform the program automatically. (see appendix 2).

5.4 End of cycle

After cycle is completed, the printer will be activated and print out a report of the cycle (if the optional printer has been connected) or save the report in the USB drive (optional).

Caution: Always use the tray handle to load or unload the tray into the autoclave. Failure to do so can result in burning.
5.5 Manual abort of the program
It is possible to interrupt a started cycle prematurely. If you need to interrupt a cycle and remove the items urgently, you may hold the “Start” button for 3 seconds. (If held for 3 seconds during the drying time, this will skip the dry cycle.

If you interrupt any cycle before it reaches the “Drying” step, then the items inside the autoclave must be considered not sterile.

If you need to interrupt a cycle after the holding time of the sterilization cycle and during the drying step then the items inside the autoclave can be considered sterilized.

Caution: Depending on the status of the Cycle, when the door is opened, steam may escape the chamber.

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

5.7 Printer (Optional)
If installed you can see the Icon in the screen stop flashing.
The printer (Optional) will produce a report of the cycle that just ended. At the end of each cycle the printer will print out a report of the cycle.

5.8 Report
Internal Memory
In this menu you can read the latest information of the last 20 cycles stored in the internal memory of the sterilizer.
5.9.1 Select “Report” from the main menu and press the “Set” button, you will see the list of records.
5.9.2 Select the record by pressing the up or down buttons.
5.9.3 Press the “Set” button.
Then the record is printed (if the optional printer has been connected) the report or/and is saved in the USB drive (optional).
Note: It can save in the internal memory only the reports of the last 20 cycles.
Note: The storage system is based on the principle of “first In-first-Out”.
Tap start button to exit.

When viewing printed data records, refer to the diagram below:
Program:     WRAPPED
Temperature:  134°C
Pressure:     206.0 kPa
Dry Time:     02Min
Ster Time:    4.0Min

<table>
<thead>
<tr>
<th>Time</th>
<th>Temp.</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>15:24:20</td>
<td>042.0°C</td>
</tr>
<tr>
<td>T1:</td>
<td>15:32:11</td>
<td>070.0°C  053.2kPa</td>
</tr>
<tr>
<td>T2 :</td>
<td>15:36:08</td>
<td>075.3°C  009.7kPa</td>
</tr>
<tr>
<td>T3 :</td>
<td>15:39:21</td>
<td>090.3°C  050.4kPa</td>
</tr>
<tr>
<td>T4 :</td>
<td>15:44:32</td>
<td>094.3°C  009.6kPa</td>
</tr>
<tr>
<td>T5 :</td>
<td>15:47:12</td>
<td>119.0°C  102.4kPa</td>
</tr>
<tr>
<td>T6 :</td>
<td>16:00:11</td>
<td>110.2°C  009.3kPa</td>
</tr>
<tr>
<td>TS :</td>
<td>134.9°C  221.6kPa</td>
<td></td>
</tr>
</tbody>
</table>

MAX. Temperature: 135.1°C
MIN. Temperature: 134.5°C
MAX. Pressure:     230.4kPa
MIN. Pressure:     212.9kPa
T7 :   16:04:02 | 135.0°C  223.5kPa  |
T8 :   16:06:32 | 134.8°C  214.1kPa  |
End 16:14:12 | 78.2°C  |

Cycle No: 0005
Ster Value: Success
Date: 2011-01-18
SN:E00001
Operator:
6. Advance setting

The advance setting interface permits to set the following options:

* **Parameter:** Permits to change the time of Holding time and Drying time.
* **Unit:** Permits to change the unit of measure temperature and pressure.
* **Preheat:** This option allows you to maintain the required temperature in the sterilization chamber and the steam generator to start a new cycle immediately for the next 60 minutes so to run a new cycle should expect preheating time from 3 to 5 minutes upon start.

If the option is disabled (OFF) once the sterilization cycle end immediately the Autoclave is no longer heated, so when you start a new cycle should expect a preheating time between 3 to 5 minutes upon start.

**Note:** To maintain the temperature for longer time it is recommended that after each cycle hold the door closed.

### Enter the setting

Power on the machine while holding the set button and hold for 5 seconds. This will enter into the advanced setting mode.

#### 6.1 Parameter

Press up or down buttons to select Parameter. Press “Set” button to enter the menu.

Select the program that you need to change by pressing the up or down buttons. Press “Set” button to enter the setting.

Adjust the parameter by pressing the up or down buttons.

- **Drying time:** 0-20 minutes
- **121℃** holding time: 1-60 minutes
- **134℃** holding Time: 1-20 minutes

After you finish adjusting the parameter Press the “Set” button to save and return to the above menu. Press the “Start” button to cancel and exit.

#### 6.2 Ambient pressure

Select the “Ambient Pressure” to calibrate the local ambient pressure to 0.

Tap set button to enter the menu.

- Make sure the pressure inside the chamber had been balanced.
- Press the “Set” button to calibrate the pressure.
- Press the “Return” button to cancel and exit.

#### 6.3 Unit

Select the “Unit” to adjust the unit of temperature and pressure.

Press” the “Set” button to enter the menu.

Select the item by pressing the “Set” button.

Change the unit by pressing the up or down buttons.

- **Pressure:** kPa/bar/psi
- **Temperature:** ℃/℉

Press the “Set” button to save and exit. Cancel and Exit by pressing the “Return” button.

#### 6.4 Preheat

Select the “Preheat” to adjust the Preheat.

Press the “Set” button to enter the menu.

If you prefer not to activate the automatic preheating, set the value to “OFF” by pressing the up or down buttons.

Press the “Set” button to save. Tap start button to cancel and exit.
7. Maintenance

To assure proper operation and maximum autoclave life, carefully follow all recommendations for periodic maintenance.

One of the MOST important steps you can take to prevent problems with your sterilizer is to use ONLY distilled water.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Number of cycles</th>
<th>Maintenance operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>50</td>
<td>Clean the door seal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean the filter inside the chamber and in the clean water tank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clean the chamber the trays and the rack</td>
</tr>
<tr>
<td>Every 3 months</td>
<td>200</td>
<td>Clean the external surface</td>
</tr>
<tr>
<td>Every year</td>
<td>800</td>
<td>Clean the distilled water tank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace the door seal</td>
</tr>
</tbody>
</table>

7.1 Clean the distilled water tank

Disconnect the main cable.

Drain the tank completely using the drain tube and leave it connected into the connector in an open position.

Clean the internal surface with a soft sponge and a small soft brush for the areas that are difficult to reach using and a mild soap.

Remove the filter and clean it with a small soft brush and mild soap, rinse it with distilled water and put it back in to the position.

7.2 Clean Chamber, door seal, trays and tray Rack.

Remove the trays and tray rack from the chamber.

Clean trays, rack and inside of chamber with mild soap.

Rinse the trays, rack and inside of chamber with a smooth cloth and distilled water.

Examine door seal for possible damage.

Clean door seal and mating surfaces with a damp cloth.

Note: Do not use bleaching agents or any abrasive materials / substances in chamber. Failure to comply may result in damage to the chamber and/or other components.

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

7.3 Door adjustment

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

7.4.1 Open the door.

7.4.2 Insert the spanner in the hole. Loose the screw anticlockwise.

Tighten the door by rotate the lid counter-clockwise. Loosen the door by rotate the lid clockwise as the figure below.

7.4.3 Tighten the screw clockwise.

Caution: Never adjust the chamber door while the door is closed.
7.4 Replacement of the door seal
Open the chamber door. Remove the door seal ring carefully by hand. Clean the door seal ring carefully with a smooth cloth with distilled water. Moisten the new seal with medical disinfectant or isopropyl alcohol.
Insert the new seal and press in sequence as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2)</td>
<td>Press in the top and bottom of the door seal.</td>
</tr>
<tr>
<td>2)</td>
<td>Press in the left and right sides of the door seal.</td>
</tr>
<tr>
<td>3)</td>
<td>Press the remaining sections of the seal.</td>
</tr>
</tbody>
</table>

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

7.5 The drain valve

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Press the included hose on to the drain valve firmly.</td>
</tr>
<tr>
<td>2.</td>
<td>Pull the drain valve outward to drain the tank.</td>
</tr>
<tr>
<td>3.</td>
<td>Push the drain valve back after draining the tank.</td>
</tr>
</tbody>
</table>
# 8. Error codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Proposed solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Steam generator temperature sensor error</td>
<td>Power off &amp; run a new cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E2</td>
<td>Inner temperature sensor error</td>
<td>Power off &amp; run a new cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E3</td>
<td>Temperature sensor of the chamber wall error</td>
<td>Carefully ensure that the chamber wall is heated and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>contact your supplier</td>
</tr>
<tr>
<td>E5</td>
<td>Fail to release the pressure</td>
<td>Power off &amp; run a new cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E6</td>
<td>Door lock problem during the cycle</td>
<td>Check the door close switch.</td>
</tr>
<tr>
<td>E9</td>
<td>Failure to hold temperature</td>
<td>Ensure the distilled tank isn’t empty. Check the inner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>temperature sensor. Check somewhere for leaking.</td>
</tr>
<tr>
<td>E11</td>
<td>Failure to preheat the steam generator</td>
<td>Power off &amp; run a new cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E12</td>
<td>Failure to preheat the chamber</td>
<td>Power off &amp; run a new cycle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E20</td>
<td>Program manually interrupted</td>
<td>Holding the set button for 3 seconds</td>
</tr>
<tr>
<td>E21</td>
<td>Failure to reach the holding time. (sterilization time)</td>
<td>Check somewhere leaking inside the autoclave.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persist</td>
</tr>
<tr>
<td>E23</td>
<td>Result of vacuum test is void</td>
<td>The temperature of the chamber is high. Try again after the chamber has cooled down.</td>
</tr>
<tr>
<td>E24</td>
<td>It takes too long time to enter the next status.</td>
<td>Check somewhere leaking.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Or contact your supplier if error persists.</td>
</tr>
<tr>
<td>E25</td>
<td>There is a problem of locking the door.</td>
<td>The door is too tighten.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Or Check the door locking switch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the door motor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persists.</td>
</tr>
<tr>
<td>E26</td>
<td>There is a problem of unlocking the door.</td>
<td>Check the door unlocking switch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the door motor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact your supplier if error persists.</td>
</tr>
<tr>
<td>E28</td>
<td>The pressure is over 240kPa</td>
<td>Power off and contact your supplier if error persists</td>
</tr>
<tr>
<td>E32</td>
<td>The pressure is not lower than -1 kPa in 30 seconds during locking the door.</td>
<td>Power off and contact your supplier if error persists</td>
</tr>
<tr>
<td>E33</td>
<td>The pressure is not lower than 1 kPa in 30 seconds during unlocking the door.</td>
<td>Power off and contact your supplier if error persists</td>
</tr>
</tbody>
</table>

Caution: You may cancel the voice of alarm by taping any button. And cancel the alarm by holding the set button for 3 seconds after you repair it. Then swith off and switch on again.
9. Transportation and storage
9.1 Switch off the sterilizer before transportation or storage.
9.2 Pull out the plug. Let the machine cool down.
9.3 Drain the distilled water tank and the used water tank.

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

10. Safety devices
1. Main fuses: Protection the instrument against possible failures of the heating resistor.
   Action: Interruption of the electric power supply.

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

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

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

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

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

7. Door safety lock: Protection against accidental opening of the door.
   Action: Impediment of the accidental opening if the door during the program.

8. Self-leveling hydraulic system: Hydraulic system for the natural pressure leveling in case of manual cycle interruption, alarm or black-out.
   Action: Automatic restoration of the atmospheric pressure inside chamber.
## Water properties / Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Feed water</th>
<th>Condensate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporate residue</td>
<td>≤ 10mg/l</td>
<td>≤ 1.0mg/kg</td>
</tr>
<tr>
<td>Silicium oxide sio2</td>
<td>≤ 1mg/l</td>
<td>≤ 1.0mg/kg</td>
</tr>
<tr>
<td>Iron</td>
<td>≤ 0.2mg/l</td>
<td>≤ 0.1mg/kg</td>
</tr>
<tr>
<td>Cadmiun</td>
<td>≤ 0.005mg/l</td>
<td>≤ 0.05mg/kg</td>
</tr>
<tr>
<td>Lead</td>
<td>≤ 0.05mg/l</td>
<td>≤ 0.1mg/kg</td>
</tr>
<tr>
<td>Rest of heavy metals</td>
<td>≤ 0.1mg/l</td>
<td>≤ 0.1mg/kg</td>
</tr>
<tr>
<td>Chloride</td>
<td>≤ 2mg/l</td>
<td>≤ 0.1mg/kg</td>
</tr>
<tr>
<td>Phosphates</td>
<td>≤ 0.5 mg/l</td>
<td>≤ 0.1mg/kg</td>
</tr>
<tr>
<td>Conductivity</td>
<td>≤ 15μs/cm</td>
<td>≤ 3 μs/cm</td>
</tr>
<tr>
<td>PH Value</td>
<td>5 – 7.5</td>
<td>5-7</td>
</tr>
<tr>
<td>Appearance</td>
<td>Colorless, clean</td>
<td>Colorless, clean</td>
</tr>
<tr>
<td>Hardness</td>
<td>0.02 mmol/l</td>
<td>0.02 mmol/l</td>
</tr>
</tbody>
</table>
# Appendix 2

## Diagrams of the sterilization programs

<table>
<thead>
<tr>
<th>Programs</th>
<th>Temperature (°C)</th>
<th>Pressure (kpa)</th>
<th>Holding time (min)</th>
<th>Total time (min)</th>
<th>Type</th>
<th>Max load (kg)</th>
<th>Max load per tray (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNWRAPPED</td>
<td>134</td>
<td>210</td>
<td>4</td>
<td>25-40</td>
<td>Unwrapped solid material</td>
<td>6.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>121</td>
<td>110</td>
<td>20</td>
<td>25-40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRAPPED</td>
<td>134</td>
<td>210</td>
<td>6</td>
<td>33-53</td>
<td>Unwrapped porous material</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>121</td>
<td>110</td>
<td>20</td>
<td>30-50</td>
<td>Single-wrapped porous material</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped porous material</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single-wrapped hollow material</td>
<td>4.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped solid and hollow material</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td>TEXTILE</td>
<td>134</td>
<td>210</td>
<td>10</td>
<td>37-57</td>
<td>Unwrapped porous material</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>121</td>
<td>110</td>
<td>30</td>
<td>40-60</td>
<td>Single-wrapped porous material</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped porous material</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single-wrapped hollow material</td>
<td>4.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped solid and hollow material</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td>(Extensive)</td>
<td>134</td>
<td>210</td>
<td>18</td>
<td>45-65</td>
<td>Unwrapped porous material</td>
<td>6.0</td>
<td>2.0</td>
</tr>
<tr>
<td>PRION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single-wrapped porous material</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped porous material</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Single-wrapped hollow material</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dual-wrapped solid and hollow material</td>
<td>4.0</td>
<td>2.0</td>
</tr>
<tr>
<td>LIQUID</td>
<td>134</td>
<td>210</td>
<td>10</td>
<td>60-80</td>
<td>Liquid</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>LIQUID</td>
<td>121</td>
<td>110</td>
<td>30</td>
<td>60-80</td>
<td>Liquid, agar</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>DRYING</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1-20</td>
<td>Liquid, agar</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

The time required for sterilizer to be ready for routine use after the power is switched is less than 5 minutes.

The max. Temperature of the 134°C sterilization cycle is 137°C

The max. Temperature of the 121°C sterilization cycle is 124°C
Appendix 3

Wiring diagram

TP1: Steam generator temperature sensor
TP2: Inner temperature sensor
TP3: Temperature sensor of chamber wall
V1: Air release valve
V4: Water release valve
Appendix 4

Hydraulic diagram

V1: Air release valve
V4: Water release valve