NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

OT 100V

VERTICAL LABORATORY STEAM STERILIZER

USER'S MANUAL

CE 1984

Z14.K25 263 Rev.No: 06 Rev.Date: 02 / 2012

Dear Nüve User,

We would like to take this opportunity to thank you for preferring this Nüve product. Please read the operating instructions carefully and keep them handy for future reference.

Please detain the packing material until you see that the unit is in good condition and it is operating properly. If an external or internal damage is observed, contact the transportation company immediately and report the damage. According to ICC regulations, this responsibility belongs to the customer.

While you are operating the instrument please;

- obey all the warning labels,
- do not remove the warning labels,
- do not operate damaged instrument,
- do not operate the instrument with a damaged cable,
- do not move the instrument during operation.

In case of a problem contact your Nüve agent for an authorized service or maintenance.

The validity of the guarantee is subject to compliance with the instructions and precautions described in this manual.

Nüve reserves the right to improve or change the design of its products without any obligation to modify previously manufactured products.

NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

Esenboğa yolu 22.km. 06750 Akyurt/ANKARA
TEL: +(90) 312 399 28 30 (pbx)
FAX: +(90) 312 399 21 97
E-mail: sales@nuve.com.tr

European Representative: OBELIS S.A

Boulevard General Wahis 53
1030 Brussels, BELGIUM
TEL: + (32) 2.732.59.54
FAX: + (32) 2.732.60.03
E-mail:mail@obelis.net

WARRANTY CERTIFICATE

1. Nüve warrants that the equipment delivered is free from defects in material and workmanship. This warranty is given for a period of two years. The warranty period begins from the delivery date.

2. Warranty does not apply to parts normally consumed during operation or general maintenance or any adjustments described in the operating instructions provided with the instrument.

3. Nüve does not accept any liability in case where the goods are not used in accordance with their proper intent.

4.The warranty may not be claimed for damages incurred during the shipment, for damages resulting from improper handling or use, abuse, fire, liquid spillage, tampering or unauthorized repairs by any persons, use of defective or incompatible accessories, exposure to abnormally corrosive conditions, use of the product in non-standard environmental conditions, including but not limited to failure to meet requirements of ambient temperature, lubrication, humidity or magnetic field influences, from the defects in maintenance, negligence, bad functioning of auxiliary equipment, in the case of force majeure or accident and incorrect power supply.

5. In the event of failure, Nüve shall be under no liability for any injury, or any loss or damage as the result of the failure other than the guarantee conditions.

☞BEFORE OPERATING THE INSTRUMENT THIS MANUAL SHOULD BE READ CAREFULLY.

☞THE VALIDITY OF THE GUARANTEE IS SUBJECT TO THE OBSERVATION OF THE INSTRUCTIONS AND PRECAUTIONS DESCRIBED IN THIS MANUAL.

PLEASE REGISTER ONLINE TO VALIDATE WARRANTY:
To register your warranty online, please visit our web page **www.nuve.com.tr** and fill in **Warranty Registration Form.**

TABLE OF CONTENT

1. USE AND FUNCTION

OT 100V steam sterilizer is widely used in operating theatres and laboratories of hospitals; dentistry; biology, veterinary and agriculture departments of universities; microbiology and quality control laboratories of industry such as food.

OT 100V steam sterilizers are used to sterilize the wrapped or unwrapped solid products, porous products, small porous items, hollow load products, metal, glass, rubber material and liquid.

OT 100V steam sterilizers, which are suitable for the entire load mentioned above, have 5 preset programs for sterilization temperatures of 134°C and 121°C and 2 test programs. In addition, OT 100V has 5 special programs for sterilization temperatures of 105.0°C – 136.0°C and one program for liquid sterilization.

The steam is produced by the steam generator. The jacket system which is outside of the chamber provides homogeneous temperature homogeneity. Pre-heating system decreases the sterilization duration. All parts which are exposed to steam and water are made of stainless materials.

OT 100 V operates automatically without user's interference. OT 100V has several safety functions with its integrated safety thermostat, safety valve and surface thermostat in addition to the safety features of the control system (i.e. high pressure, high temperature).

Do not operate the steam sterilizer for purposes other than the main purpose. The steam sterilizer is only to be used by authorized people after the user's manual has been read carefully. Only technical personnel handle the product in case of any failure.

OT 100V steam sterilizer is designed and manufactured in accordance with international directives and EN 285, EN ISO 14971, EN 60601-1, EN 61010-1, EN 61010-2-040, EN 60601-1-4, EN 980, EN 60601-1-6, EN 62366 and EN 61326 standards under the supervision of total quality management systems ISO 9001 and ISO 13485.

2. TECHNICAL SPECIFICATIONS

2.1. Technical Specifications Table

Technical Specifications	OT 100V
Internal Material	304 Stainless Steel
External Material	304 Stainless Steel
Memory	26 Cycles
Control System	Microprocessor with LC display
No. of Preset Sterilization Programs	5 standard, 1 liquid, 5 special
Sterilization Temperatures	105°C – 136°C
Sterilization Time	1-99 minutes
No of Pre- Vacuum	1-4
Drying Time	0-60 minutes
Standby	000-999 minutes / HOLD
Temperature Sensors	PT-100
Test Programs	Vacuum Test, Bowie&Dick / Helix Test
Chamber Capacity	100 Liter
Internal Dimensions (diameter x depth) mm	∅400x850
External Dimensions (WxDxH) mm	890x630x1120
Packing Dimensions (WxDxH) mm	980x730x1270
Power Consumption	7500W
Power Supply	400V 50/60 Hz. 3 Phases+N+G

2.2. Options and Accessories

FACTORY FITTED OPTIONS

OT 100VY Panel type thermal printer
OT 100VA Automatic water supply unit
OT 100VE NuveLift

ACCESORRIES

Y 07 002 Thermal printer
Y 07 004 **NuveStore™** SD Card Writer with 2 GB SD card

3. PRECAUTIONS AND LIMITATIONS OF USAGE

- Do not operate the instrument for purposes other than its main purpose.
- The set-up, installation, initial functioning, service and maintenance shall be handled by authorized personnel appointed by the manufacturer.
- The instrument should only be used by authorized and trained staff after the instruction manual has been read carefully. Only authorized technical staff can handle the product in case of a failure.
- Do not attempt to open the lid during the operation
- OT 100V vertical steam sterilizer is suitable for the sterilization of the wrapped or unwrapped solid products, porous products, small porous items, hollow load products, metal, glass, rubber material and liquid. Materials other than these and heat susceptible objects, explosive, flammable, adhesive and fusible materials shall not be used.
- The load which would be sterilized should withstand to the applied sterilization temperature.
- Proper sterilization program shall be selected in accordance with the load type and the sterilization load shall be disinfected prior to being placed into the unit.
- When you close the lid, please be careful and do not constrict your hand.
- When the lid is opened at the end of the operation, do not approximate the lid, steam rising can cause burning of your hand or face.
- Wear the protective gloves while taking the sample out after sterilization.
- Make sure that there is no anything on the lid gasket. If there is something, it will cause rising steam and can imperil the sterilization.

- Check if the electric line is proper for the device. If it is not 3 phases, please make new line.
- Be careful about the electrical connection of the device. 3 phases connection should be done by professional electricians.
- There will be hot steam and water discharge in the waste water outlet. Because of this reason please connect the waste water outlet directly to the discharge line.
- Use only ***DISTILLED WATER***.
- Be careful the warnings listed on the screen, any program must not be running or all of the work-energy and energy will be cut off when completed. Be sure the door is fully closed, door of the chamber in the closed position, if there is "DOOR OPEN" warning in the display.
- Only original spare parts and original accessories supplied by Nüve should be used.
- Correctly grounded power supply should be used.

4. SYMBOLS

	Symbol in the operating instructions: Attention, general hazard area. This symbol refers to safety relevant warnings and indicates possibly dangerous situations. The non-adherence to these warnings can lead to material damage and injury to personal.
☞	Symbol in the operating instructions: This symbol refers to important circumstances.

5. INSTALLATION

5.1 Environmental Conditions

OT 100V is designed to operate safely under the following conditions:

- Indoor use only
- Ambient temperature: 5°C to 40°C.
- Maximum relative humidity for temperature up to 22°C : 80%.
- Maximum altitude: 2000 m.
- Temperature for maximum performance: 15°C / 25°C.

5.2 Mains Supply

The steam sterilizer requires 400 V, 50/60 Hz 3 phases +N+G

Please make sure that the supplied mains matches the required power ratings which are written on the name plate of the instrument located at the back of the steam sterilizer.

 Always plug-in the instrument to correctly grounded sockets.

 A supply fitted with a circuit breaker should be used for protection against indirect contact in case of an isolation fault.

5.3 Positioning

- Check that no damage has occurred during transport.
- Check that the proposed location is suitable to the purpose of usage and appropriate for the users.
- Make sure that the steam sterilizer is placed on a level surface and stable on its four castors.
- Check that the user will be able to follow up the sterilization even when he deals with something else.
- Make sure that the unit does not obstruct the working area of surrounding equipment. Check that the unit does not interfere with or influenced by other equipment in the vicinity.
- Check the right, left and back side spaces of the device. They should be minimal 30 cm.
- Do not place the device near to the explosive materials.

- Make sure that there is no anything on the lid gasket. Then, close the lid carefully, and take the lid handle close position.

5.4. General Presentation

Figure 1

Figure 2

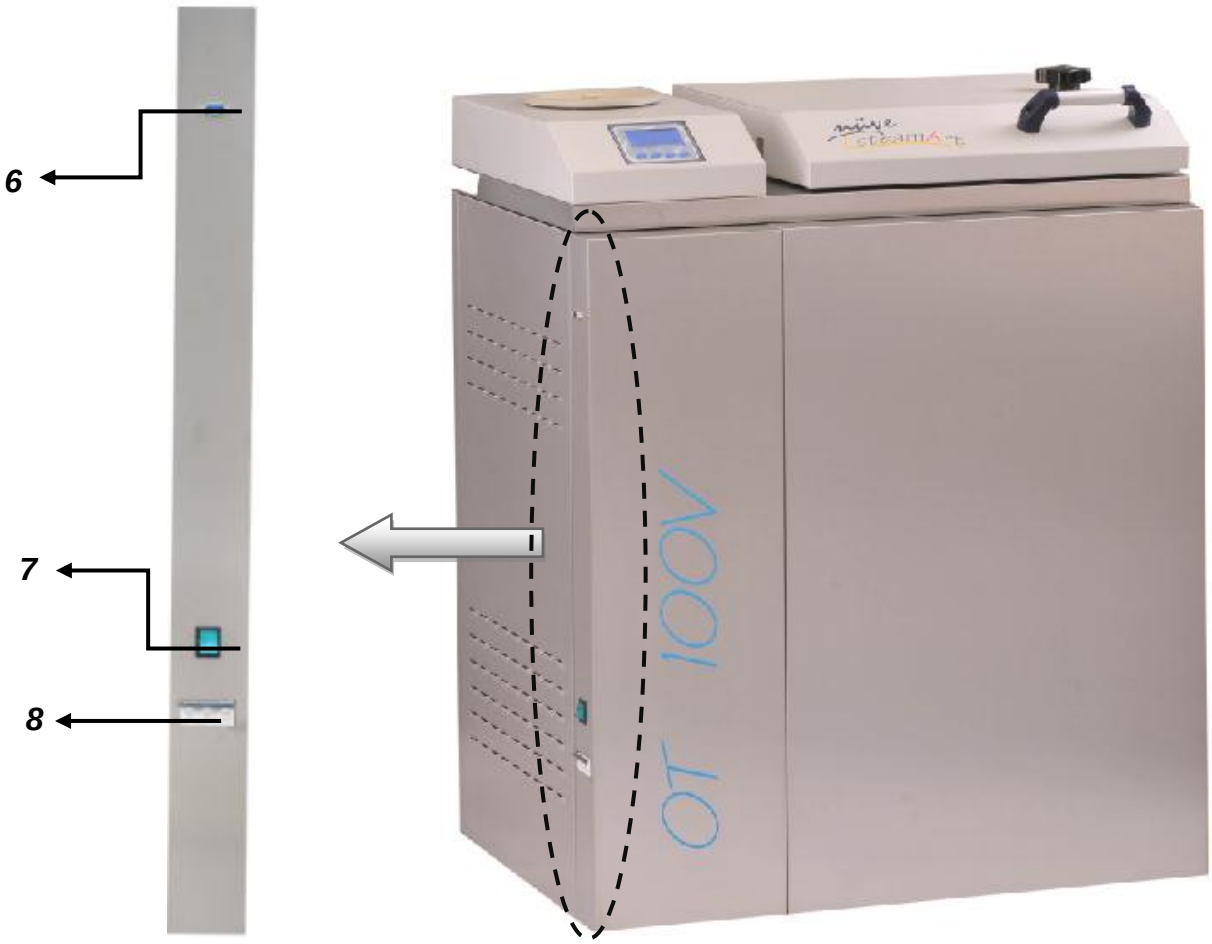
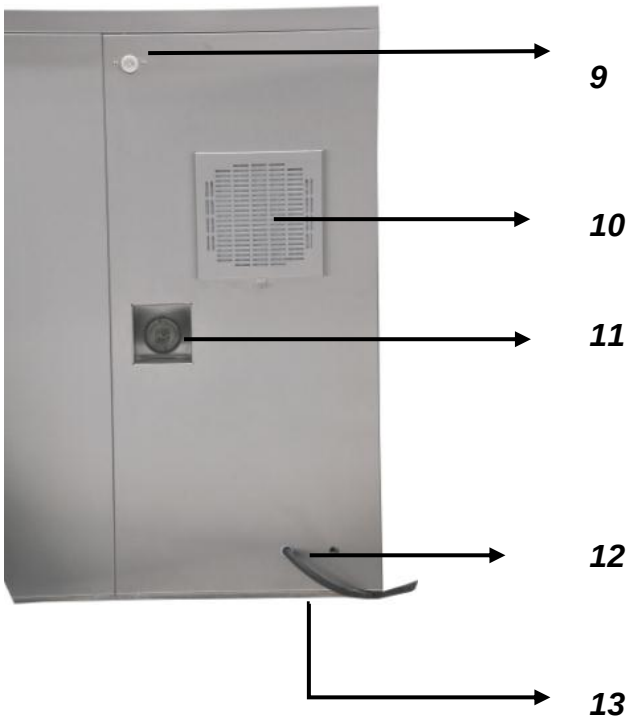
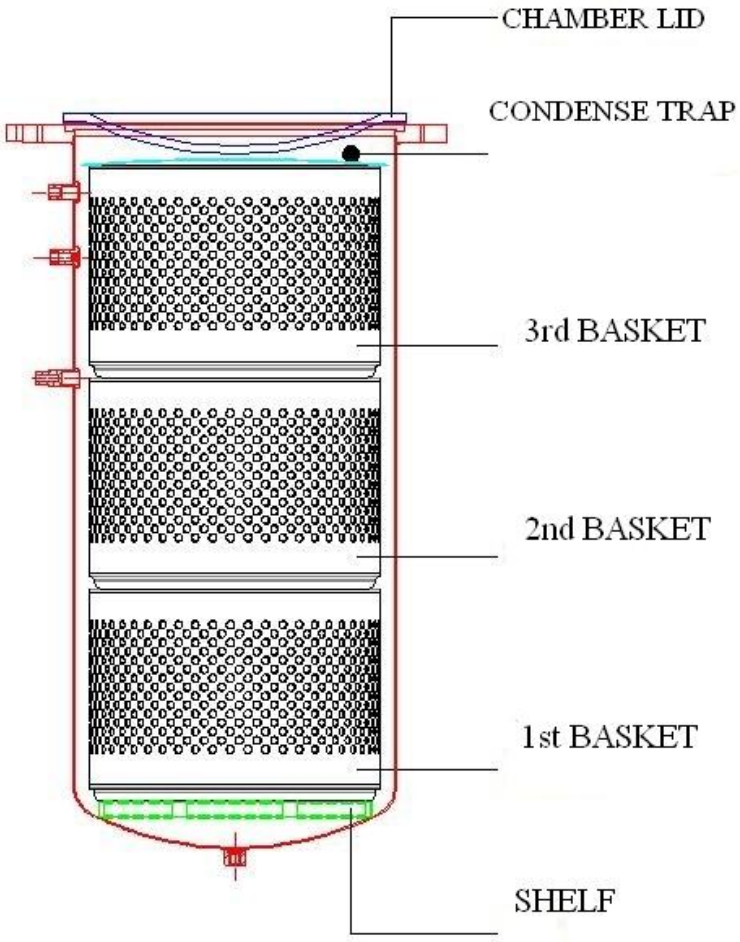


Figure 3



1	Water Tank Lid
2	Control Panel (LCD)
3	Lid Handle
4	Lid Locking Knob
5	Lid
6	RS 232 Port
7	Power Switch
8	Automatic Fuses (3x16A)
9	Automatic Water Supply Inlet (optional)
10	Condenser Filter
11	HEPA Filter
12	Waste Water Discharge
13	Power Cable (3 phases)

Figure 4



1.) ***Water Tank Lid:*** Has to be opened to fill up the water tank.
2.) ***Control Panel:*** Consists of an LC display and four touch buttons to scroll around, select and adjust the functions of the microprocessor control system.
3.) ***Lid Handle:*** Helps the user to open and close the lid.
4.) ***Lid Locking Knob:*** This knob locks and unlocks the lid.
5.) ***Lid:*** Sterilization chamber lid.
6.) ***RS 232 port:*** Serial port for PC communication of the unit (in case used together with the software that is provided with the unit).This port is also used to connect a printer and NuveStore™ SD card writer.
7.) ***Power switch:*** Used to power on and off the unit.
8.) ***Automatic Fuses:*** Main fuses on the phase-neutral lines.
9.) ***Automatic Water Supply Inlet:*** This inlet helps to get the water into the water tank automatically.
10.) ***Condenser Filter:*** This filter protects the condenser from dust.
11.) ***HEPA Filter:*** Used to sterilize the atmospheric air entering to the chamber.
12.) ***Waste Water Discharge:*** Used to discharge the waste water.
13.) ***Power Cable:*** It is the cable connected to the plug to power on the instrument.

6. INSTALLATION PROCEDURE

6.1. Lifting and Transport

Because of the heavy weight of the instrument, all lifting and transport must be carried out by experienced staff using proper handling equipment. The instrument must be supported from underneath and never be turned over.

6.2. Contents of the Package

Unwrap the cardboard and then the nylon packaging of the instrument and control that the following parts are given with:

- 1 piece of User's Manual
- 1 piece of HEPA Filter
- 3 pieces sterilization basket
- 1 piece of 3-phase plug and socket
- 1 piece of thermal gloves
- 1 piece of NuveSteamArt™ software
- 1 piece of PC communication cable
- 1 piece of Condense Trap

6.3 Preparation To Sterilization

6.3.1. Filling In Distilled Water

- Water shall be added to the unit in case the unit gives "insufficient water" warning upon trying to run a sterilization program.
- Only **DISTILLED WATER** shall be used in the unit.
- Open the water tank lid on top of the unit and fill distilled water up to the maximum level (see Figure 2)

If the distilled water is not used, this may cause damages. <u>In this situation all responsibility belongs to the user!</u>

6.3.2. Programs

Universal Program: Use for materials that are resistant to 134ºC; materials with package (single-wrapped, double wrapped) or without package (unwrapped) tools (solid) (not gathering water, example: metals)

Quick Program: When drying is not important, use for materials that are resistant to 134ºC and without package (unwrapped) materials tools (solid)

Sensitive Program: Use at 121ºC for materials which have low heat-resistance; materials with package (single-wrapped, double-wrapped) or without package (unwrapped) textile or tools (solid) (not gathering water, example: metals).

Prion Program: Use for materials that are resistant to 134ºC; materials with package (single-wrapped, double wrapped) or without package (unwrapped) or tools (solid) (not gathering water, example: metals)

Solid Program: Use for materials that are resistant to 134ºC; materials with package (single-wrapped, double wrapped) or without package (unwrapped) tools (solid) (not gathering water, example: metals)

Before starting the device, the pre-heating must be selected as ON (active) position. Pre-heating helps to heat the load and prevent condensation. Do not forget to place the condense trap on top of the first basket for every run.

6.3.3. Packaging of loads

The correct packaging of the materials is essential in ensuring that sterility is maintained. The way in which the sterilized instruments are packaged, and then stocked, determines the state of preservation of sterilization.

The following can be used as containers: metal containers with lids or perforated bottoms with filters in paper, pouches in paper or polypropylene, Medical Grade paper or trays that are perforated or with grilles. Pouches in paper-polypropylene are excellent packaging systems for steam sterilizing small sets of surgical instruments.

Use materials that comply with **EN 868-1** for packaging the materials to sterilize.

Do not re-sterilize the pouches in paper-polypropylene and the Medical Grade, in that they undergo a substantial change in their structural characteristics and would no longer guarantee the characteristics of “protective barrier”.

For packaging, observe the following recommendations (for pouches in paper-polypropylene):

1.) Contents must not exceed ¾ of the volume of the pouch.
2.) The instruments must be positioned so that they can be extracted by their handle.
3.) The sealing strip on the pouch must be continuous with a height of at least 6 mm.

Each packaged prepared must at least indicate the date of sterilization, the type of cycle performed and the date in which the preservation of sterility expires; this latter value must be established considering the length of preservation of sterility as indicated by the manufacturer of the packaging material, the internal procedure used and stocking conditions of the sterilized material itself.

Instruments packaged in individual pouches have a life (in terms of sterility) of 30 days, those in double pouches of 60, if kept in closed cabinets. These values are, in any case, to be considered indicative, in that the date of preservation is influenced by various factors, such as the environmental microbic level, the granulometry of environmental dusts (that act as carriers of micro-organism), as well as the temperature, pressure and ambient humidity parameters and the degree of handling of the sterilized material.

It is suggested to operate the device empty in every morning.

Positioning the load
The way in which the load to sterilize is arranged is also considerably important to sterilization process. Always observe the maximum load indicated in this manual, a value that has been tested by the manufacturer and that is therefore valid.

- Always use the tray supports, to facilitate the circulation of steam.
- Do not load trays that are not being used.
- Ensure that instruments of different materials are separated and placed on different trays.
- Position the instruments sufficiently distant from one another that they remain separate for the whole sterilization cycle.
- Do not stack instrument to the tray: overloading could compromise sterilization.
- Do not stack the trays on top of each other, but use the tray support. It is necessary to leave a space between each tray to allow for the circulation of steam during the sterilization phase and then to facilitate drying.
- Place a chemical sterilization indicator on each tray.
- **Packages:** Place the packages upwards, next to each other, do not allow them to come into contact with the sides of the chamber.

- **Material in pouches:**
  - When sterilizing material in pouches, do not overlap the pouches on the trays.
  - Place the pouch with the transparent side face down (in contact with the tray) and with the paper face up. Instruments must be put into separate pouches.

Unloading and preserving sterilized instruments
The material is at the greatest risk of contamination while it is still hot, because the barrier capabilities of the packaging materials are much lower in the presence of residual humidity, compared to an ambient temperature situation. The materials, therefore, should not be stacked once they have been extracted, in order to favour the dispersion of heat.

Wait for the material to drop to room temperature before stocking it: before stocking, make sure that the packages are intact and check the chemical colour change; if the package is broken or torn, the load can only be used immediately, in that preservation of sterility cannot be guaranteed.

The indicative times for preserving the material are shown below, considering that the material itself is kept in closed cabinets away from light, heat and humidity.

Type of material	Suggested time (in days)
Combination of paper-polypropylene	30 (single) – 60 (double)
Metal containers, with standard-grade filters	28/30
Medical Grade with double orthogonal layer	28/30

The material should be stocked in sealed cabinets, 30 cm away from the floor and 5 cm from the ceiling; if this is not possible protect the material in nylon bags.

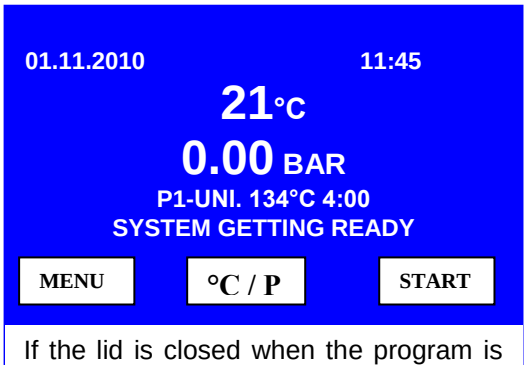
We emphasize the fact that the times indicated in the table above are indicative, in that the preservation of sterility depends on numerous factors, such as the ambient microbic level, the size of the dust particles, the ambient conditions of temperature, pressure and humidity, as well as the degree of handling of the sterilized materials themselves.

7. OPERATING PRINCIBLES

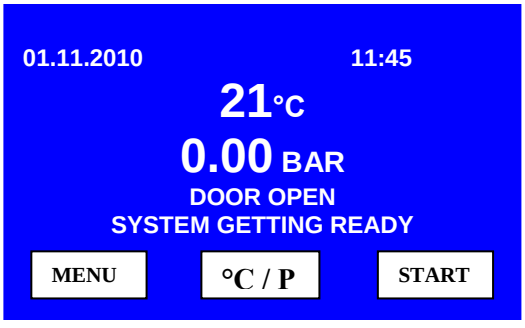
7.1. Operating the Steam Sterilizer

7.1.1. Switching-On

- Turn on the unit by using the power switch on its side.
- See that the control and the display panel activated.
- NUVE logo appears on the screen for 5 sec. and then the date and time appears.

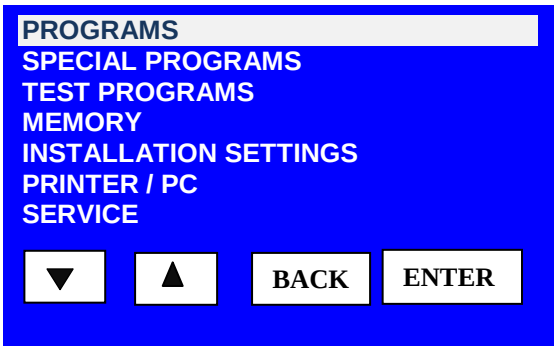


If the lid is closed when the program is completed, “Door Unlocking” message appears on the screen then the last program values appear.



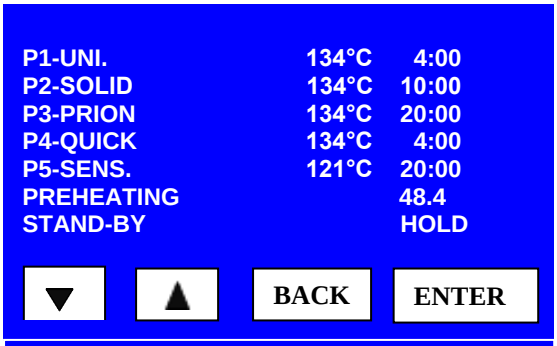
When the lid is open, the screen displays the temperature and pressure in the chamber.

The lid is initially locked when the unit is delivered. For the first operation, switch-on the instrument and wait for approximately 20 sec. for the lid to be unlocked. In case the lid is left closed, when the unit is turned-off; do not force to open the door and turn-on the unit and wait for the lid to unlocked.

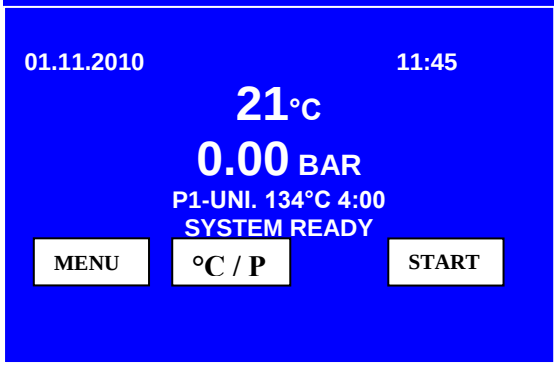


The display contains the menu items "Programs, Special Programs, Test Programs, Memory, Installation Settings, Printer & PC, Service" Each function can be opened by pushing F1 key corresponding to the "MENU" expression.

7.1.2 Programs Menu

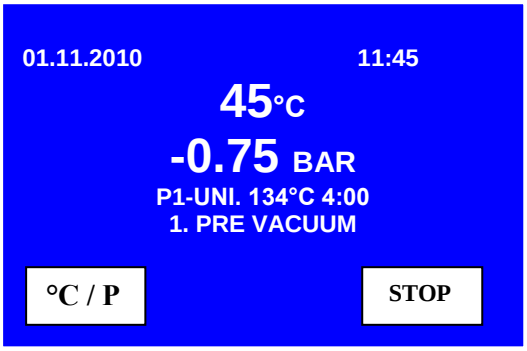


Use the Page Up and Page Down (F1-F2) keys to choose the program requested and enter (F4) to select.



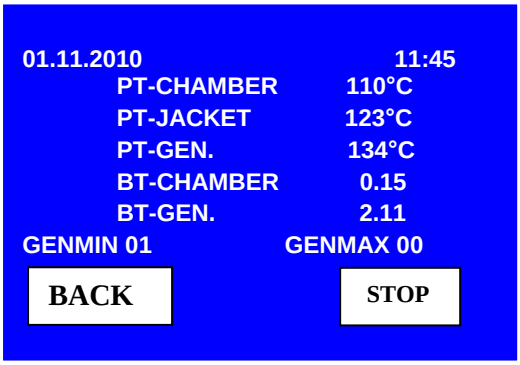
Use the Page Up and Page Down buttons to choose one of the built-in programs and enter to select. This will open up the stand-by screen for the selected program.

Note: On stand-by position, the date is displayed on the upper left corner of the screen, whereas the time is displayed on the upper right corner.



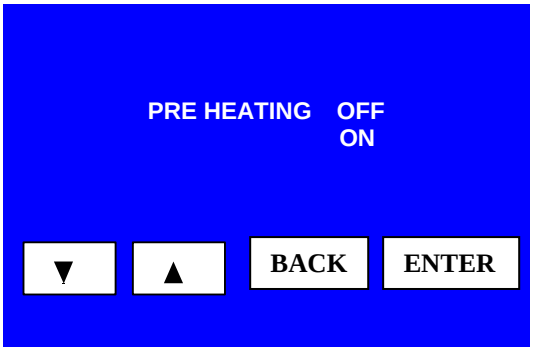
When the selected program is started by pushing the "START" key (F4); the first pre-vacuum phase begins and the following phases continue automatically.

NOTE:
The program may be stopped at any phase by pressing the “STOP” button (F4). Terminating the program causes interruption of sterilization process, which is then should be repeated. However, if a program is terminated just after the drying phase has begun or before drying is over, then sterilization is completed but drying is not. Drying phase may be skipped for the material which will immediately be used after sterilization.



The chamber and jacket (pre-heating) temperatures can be visualized by pushing the “°C” button (F1).

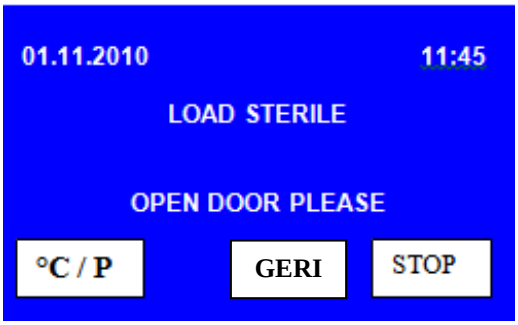
- PT-CHAMBER : Temperature of the sterilization chamber.
- PT-JACKET : Temperature of the jacket which surrounds the sterilization chamber.
- PT-GEN. : Temperature of the steam generator.
- BT-CHAMBER : Pressure of the sterilization chamber.
- BT-GEN. : Pressure of the steam generator.
- GENMIN : Shows the minimum water level of the steam generator tank.
  00 – Water is under the minimum level inside the steam generator.
  01 – Water is in minimum level inside the steam generator.
- GENMAX : Shows the maximum water level of the steam generator.
  00 – Water is under the maximum level inside the steam generator.
  01 – Water is in maximum level inside the steam generator.

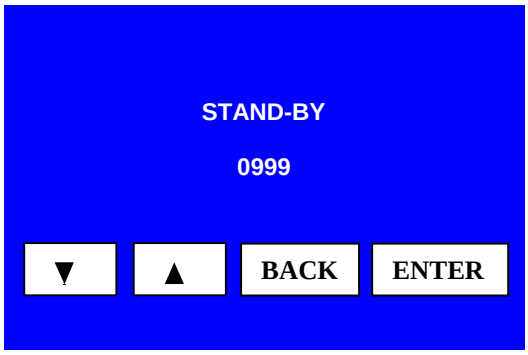


What is pre-heating?
If it is preferred that the chamber is kept hot for sterilization in between the cycles, the pre-heating function could be activated. Pre-heating will decrease the sterilization cycle duration. **It is strongly recommended to adjust preheating ‘ON’ before operating the device.**

The pre-heating activation page can be reached from the Programs page, by selecting the “PREHEATING” option.

When the sterilization cycle is successfully completed, “LOAD STERILE” message appears on the screen. Then wait for the “OPEN DOOR” is displayed to open the door and unload the samples.



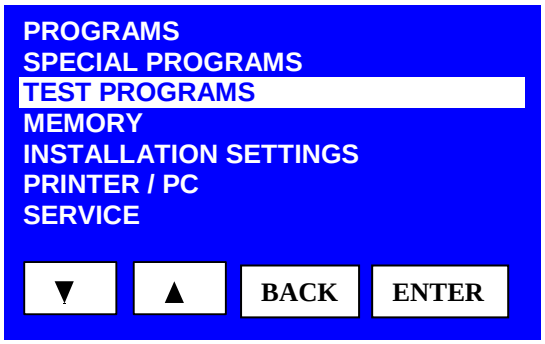


What is Stand-By?

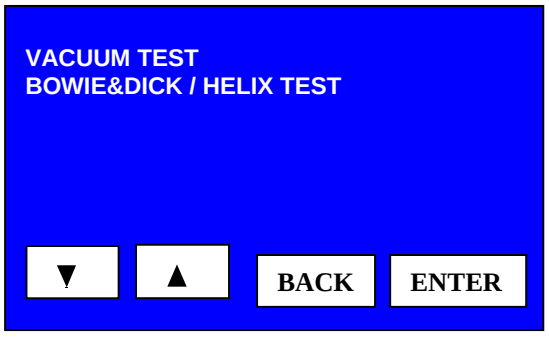
Stand-by function helps the system ready between two cycles. **If HOLD is selected, device will wait in stand-by position.**

By adjusting the stand-by time, the device will keep the jacket and the steam generator heated until the time is over. After time is up, it will stop the heating and prevents usage of more energy.

7.1.3. Test Programs Menu



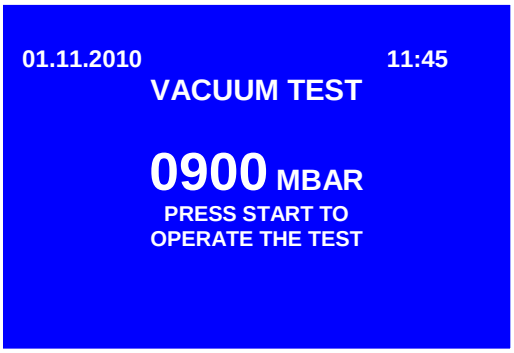
Test Programs can be opened by pushing the F1 key corresponding to the “MENU” expression.



Use the Page Up and Page Down (F1-F2) key to choose “Test Programs” and enter (F4) to select.

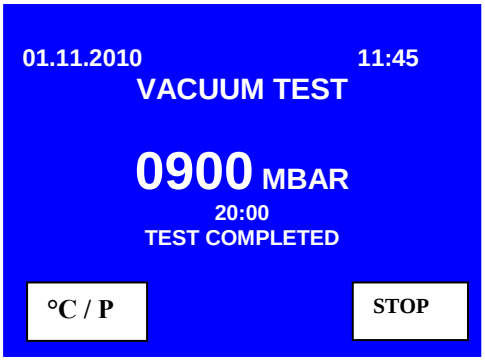
Note: This section involves the Vacuum, Bowie&Dick and Helix Tests. It is suggested to repeat the Vacuum Test weekly, whereas Bowie&Dick and Helix Tests shall be performed daily. The Vacuum Test shall be performed with an empty and unheated chamber. This test helps to determine any air leakage in the system. The Bowie&Dick and Helix Tests shall be executed with their special indicators. These indicators measure the extent of steam penetration performance of the heat and steam into the sterilization loads corresponding to the indicators.

Vacuum Test:



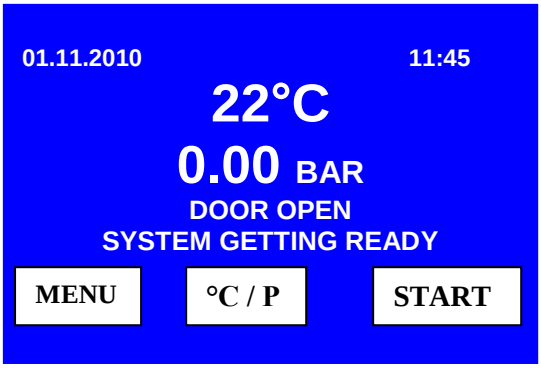
Use the Up and Down keys to choose one of the test programs and enter to select. This will open up the stand-by page for the selected program.

When the selected program is started by pressing the “START” button (F4); the test program begins and the following phases continue



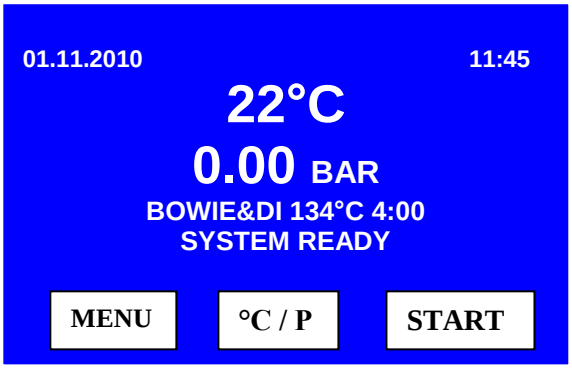
When the test is completed, “TEST COMPLETED” message appears on the display. Then, the message about the leakage value is shown. If there is no leakage ‘OK’ is shown in the display. If there is leakage, “LEAKAGE IN SYSTEM” is shown in the display. In that case, please contact with authorized technical service.

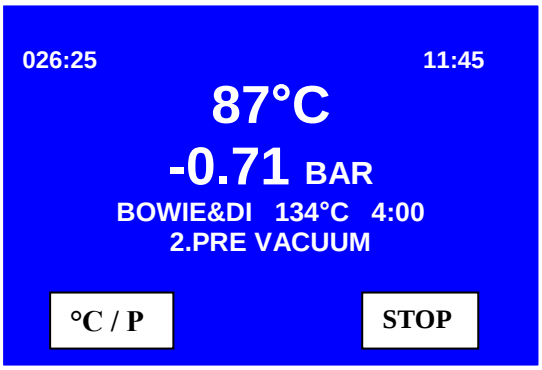
Bowie&Dick / Helix Test:



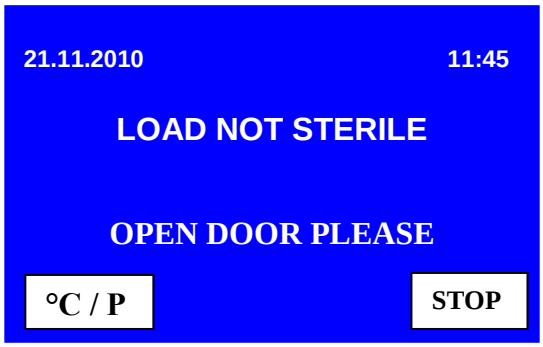
Use the Up and Down keys to choose one of the test programs and enter to select. This will open up the stand-by page for the selected program.

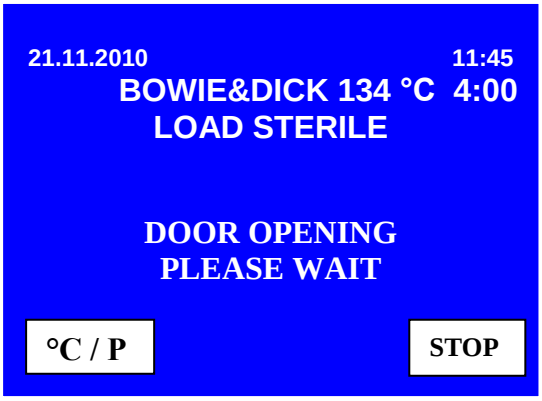
When the selected program is started by pressing the “START” key (F4); the test program begins and the following phases continue automatically.





The program may be stopped at any phase by pushing the “STOP” key (F4).





When the Bowie&Dick test is successfully completed, “LOAD STERILE” message appears on the display.

Bowie&Dick Test is used in vacuumed steam sterilizers to check if the air is running out from the load and the steam is penetrated in the load in desired speed and amount. Bowie&Dick Test should be done every day before the first operation.

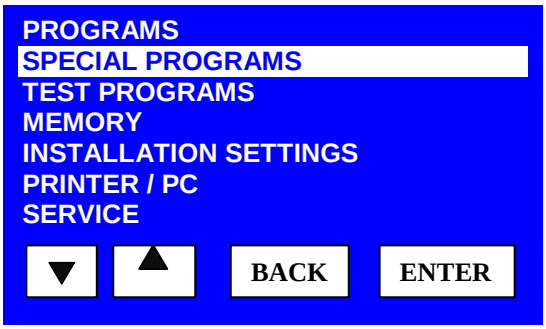
Bowie&Dick Test package should be placed inside the sterilizer in the lowest basket. There should not be any other load inside the chamber. After the test is completed, the indicator should be checked and if all the lines of the indicator paper is changed color homogeneously or not by comparing the reference indicator paper.

Bowie&Dick Test should be done by authorized people and they should have knowledge about the changes of the indicators’ color and they should follow the producer’s instruction.

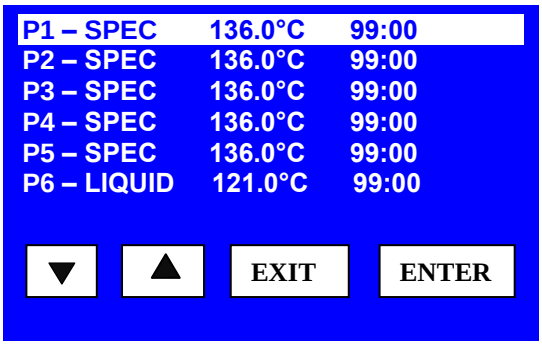
Before test

After test

7.1.4 Special Programs Menu

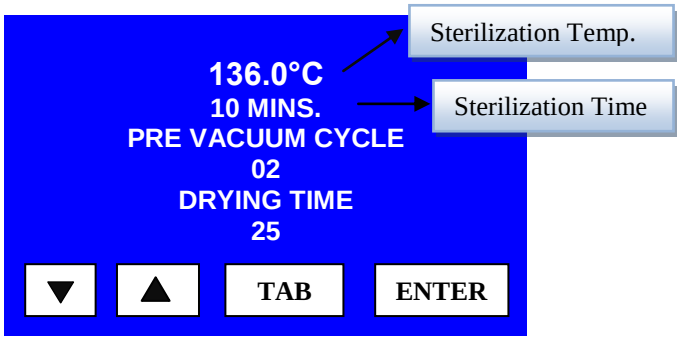


Special Programs can be opened by pushing the F1 key corresponding to the "MENU" expression. Use the Page Up and Page Down (F1-F2) keys to choose "Special Programs" and enter (F4) to select.



There are 5 programs for solid and 1 program for liquid. Use the Page Up and Page Down (F1-F2) keys to choose the desired special program and enter (F4) to select.

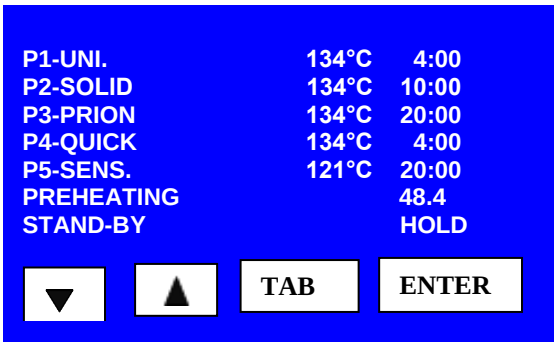
It is easy to change the parameters by using the 'TAB' button. Use the F1-F2 keys to choose the desired values. In order to save the chosen values, use 'ENTER' key.

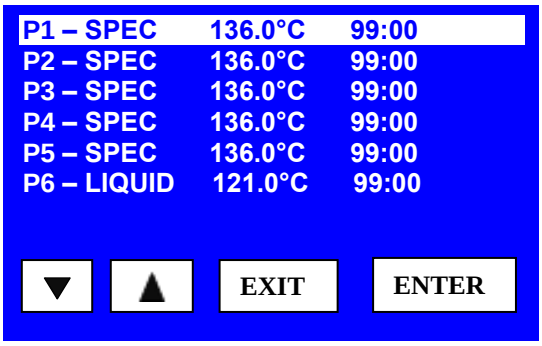


Following parameters can be programmed in the Special Programs:

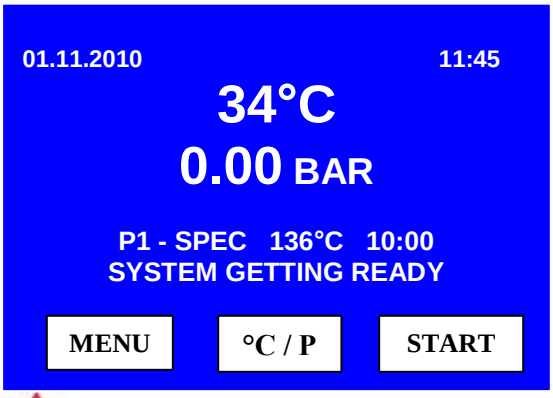
- Sterilization temperature (105.0°C – 136.0°C)
- Sterilization time (01 – 99 mins.)
- Number of Pre vacuum (01-04 times)
- Drying time (00-60 min.)

Sterilization Temperature: This is the sterilization temperature after the pre heating period.
Sterilization Time: This is the sterilization time when the device reaches the 'set temperature value' after the pre heating period.
Number of Pre Vacuum: This is the number of pre vacuum cycle which will be repeated before the sterilization phase.
Drying Time: This is the drying time of the loads after the sterilization phase.





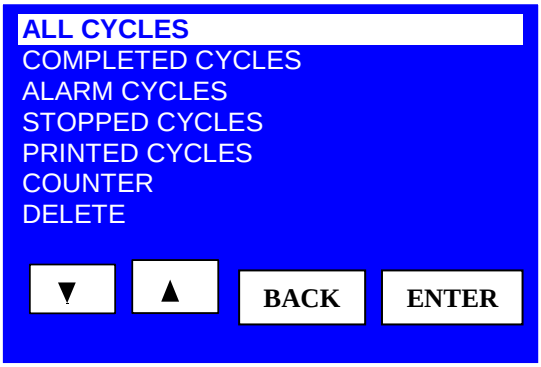
After the Special Programs are selected, 'TAB' (F3) key can be used to pass to the other screen. Use the Page Up and Page Down (F1-F2) keys to select the desired program and press 'ENTER' to save it.



When the selected program is started by pushing the "START" key (F4); the program begins and the phases continue automatically.

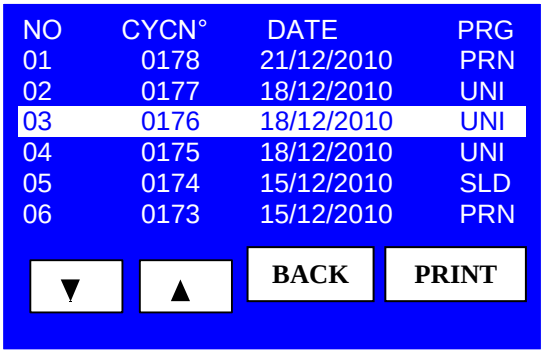
Special programs are used by the parameters that the users programs. These parameters should be used by autorized person who have the knowledge about the sterilization and its phases. If the wrong parameters are used, failures may occure on the device or on the loads.

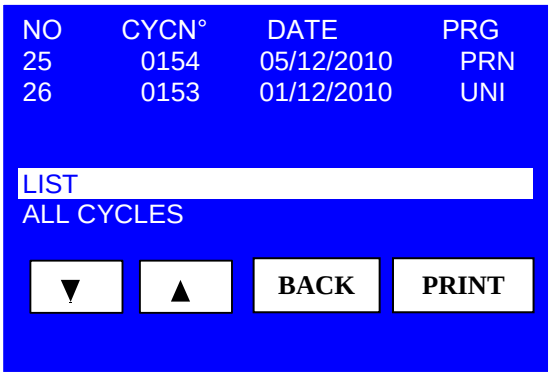
7.1.5 Memory



Use the Up and Down (F1-F2) keys to choose "MEMORY" and enter (F4) to select. The data about the previous sterilization cycles can be reached from this screen.

The requested cycle information can be selected by using the Up-Down keys (F1-F2) and can be printed by "PRINT" key (F4) – if the instrument is connected to the printer.





The last page of each memory entry involves two additional selections: “LIST” and “ALL CYCLES”. If you select “LIST” and then select “PRINT” all the cycles in the list is printed. If you select ‘ALL CYCLES” and select “PRINT” all the cycles recorded in memory are printed in details.

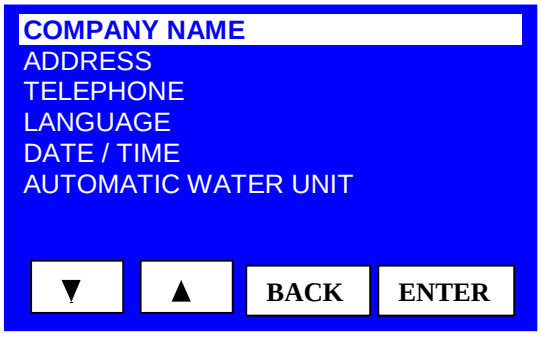
Note 1: Each memory entry contains totally 26 lines. When the cycle number exceeds 26, the new data is recorded restarting from the first line, replacing the old records. Therefore periodical printing is highly recommended and use the ‘DELETE’ key to delete the old records from the memory.

Note 2: The “COUNTER” at the end of the Memory Section, displays the total number of sterilization cycles performed in the unit.

Memory Explanations

All Cycles: All cycles can be observed and printed in details from this page.
Completed Cycles: Completed cycles can be viewed and printed in details from this page.
Alarm Cycles: Failed cycles can be viewed and printed in details from this page.
Stopped Cycles: Cycles which are stopped by the user can be viewed and printed in details from this page.
Printed Cycles: Cycles which are printed by the user can be viewed and printed in details from this page.

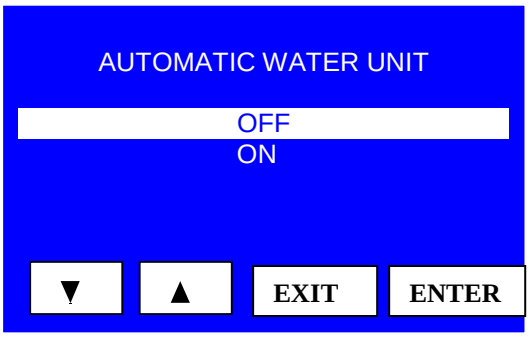
7.1.6. Installation Settings



Use the Up and Down (F1-F2) keys to choose “INSTALLATION SETTINGS” and enter (F4) to select.

- The user can enter the company information (name, address, phone number) as well as the date and time, and choose the language (Turkish, English, French) using this section. The data entered will be used on the records and print-outs.
- Use the “Up and Down” (F1-F2) keys to choose “INSTALLATION SETTINGS” and enter (F4) to select. Use the “Up and Down” (F1-F2) keys to change values and characters, the “Tab” (F3) key to move between the characters and “ENTER” (F4) to save the settings.

7.2. AUTOMATIC WATER SUPPLY UNIT (OPTIONAL)

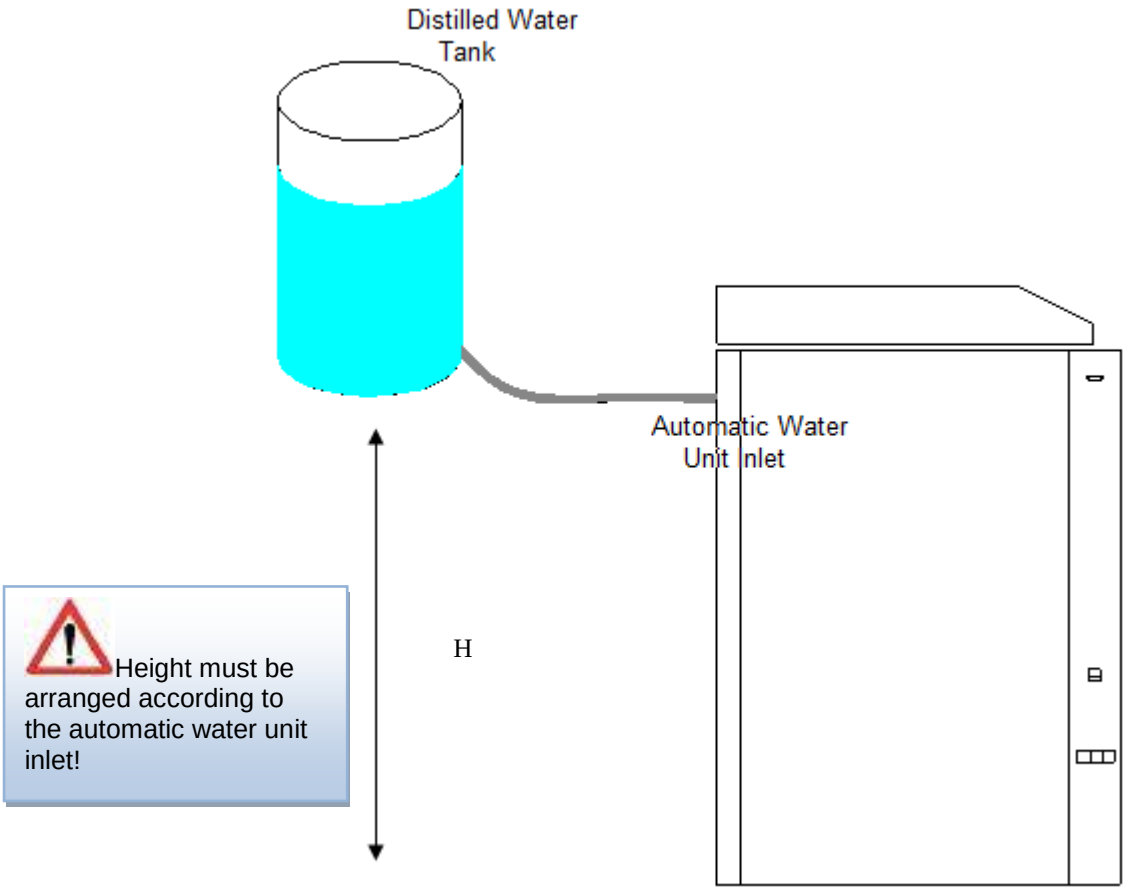


Use the Up and Down (F1-F2) keys to choose “AUTOMATIC WATER UNIT” and enter (F4) to select. Use the Up and Down (F1-F2) buttons to activate the automatic water unit.

Automatic Water Supply Unit is an optional function. If the automatic water unit is not connected to the device, program that setting as NO.

7.2.1. Automatic Water Supply Unit Connection

Automatic water supply unit connection should be done as in the following.



Water tank should be placed above the water inlet as shown in the picture; if not **there will not be any water inlet into the system!**

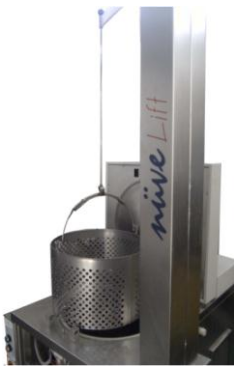
Only **DISTILLED WATER** must be used in the water tank. If distilled water is not used, there could be failures in the steam sterilizer.

When the water level is decreasing inside OT 100V, additional water comes through the water tank. Therefore, water level inside the water tank should be checked regularly!

Automatic water supply unit connection should be done by authorized staff. The capacity of the water tank should be big enough to supply enough water to OT 100V.

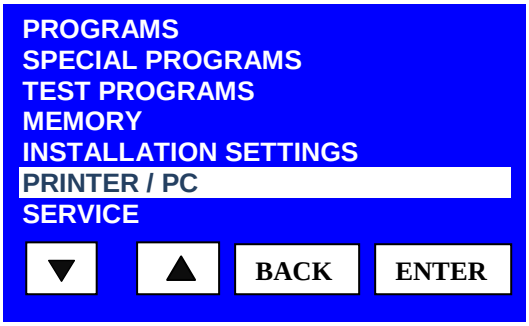
7.2.2. NuveLift (OPTIONAL)

Factory-mounted lift system allows the user; security and not having the extra power consumption which basket may guide.

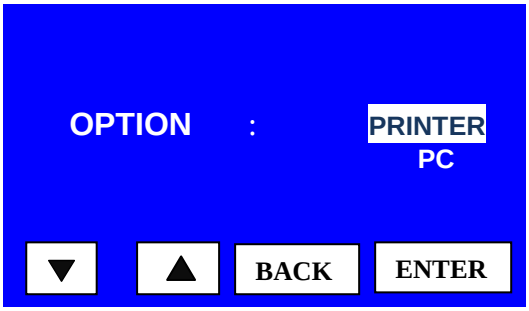


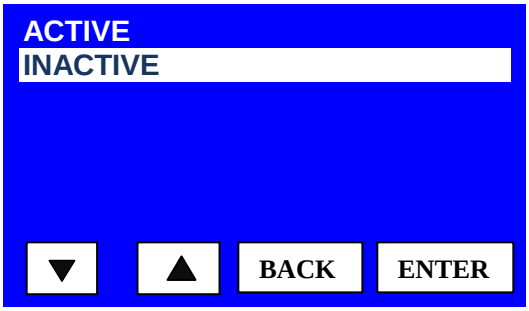
7.3. Printer,PC and NuveStore™ SD Card Writer

RS 232 port can be used for printer, PC and NuveStore™ SD Card Writer.



Use the Up and Down (F1-F2) keys to choose “PRINTER/PC”. Enter (F4) to go to the page to activate or inactivate the printer.





- If the Printer / NuveStore™ SD card writer option is activated, the sterilization steps are automatically printed after the completion of each cycle. If the Printer or SD writer is preferred to be inactive, the results of completed cycles can be printed from the recorded data in the Memory section.
- If OT 100V is connected to a computer for NuveSteamArt™ software, ‘PC’ option should be selected.

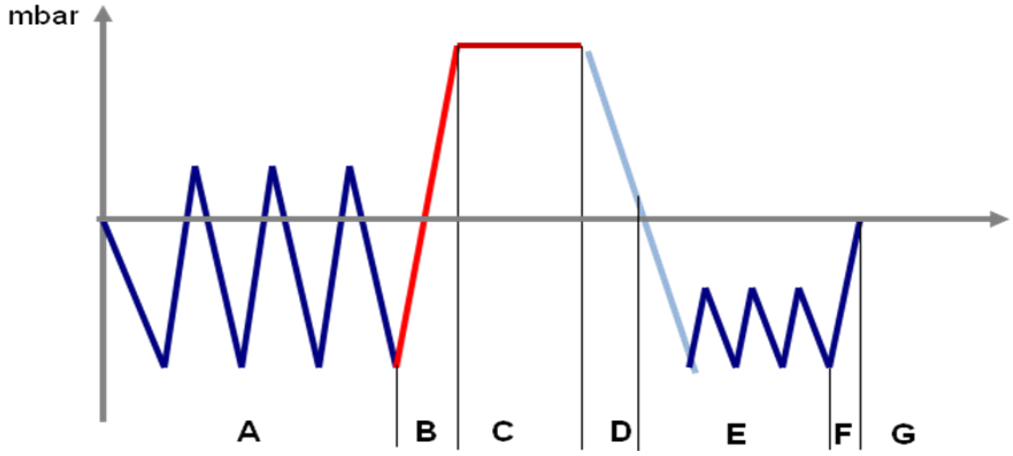
7.4. Service

Use the Up and Down (F1-F2) keys to choose “SERVICE” and enter (F4) to open the Service Code page. This section is related to the authorized technical staff only.

7.5 Operation Phases

- **PRE-VACUUM:** As soon as the program is started, the pre-vacuum phase starts to operate. The pressure in the chamber is decreased below ambient pressure by vacuuming the air out of the chamber and steam is injected in to replace the volume of vacuumed air. This phase is repeated several times depending on the selected program.
- **HEATING:** Steam is charged to the chamber.
- **STERILIZATION:** The chamber temperature is kept at the required sterilization degree all through the sterilization phase.
- **STEAM DISCHARGE:** The pressure in the chamber is decreased to the ambient pressure by discharging the steam in the chamber at the end of sterilization phase.
- **DRYING:** Following the steam discharging, the pressure in the chamber is decreased below ambient pressure and thus the humidity within the chamber is eliminated throughout the drying phase.
- **AIR INTAKE:** Following the drying phase; ambient air passing through the HEPA filter is taken into the chamber to break the vacuum and raise the chamber pressure to ambient pressure.

If the lid is not opened after the program is over, another program cannot start.



A : Pre Vacuum
B : Heating
C : Sterilization
D : Steam Discharge
E : Drying
F : Air Intake

7.6. PC and Printer Connections

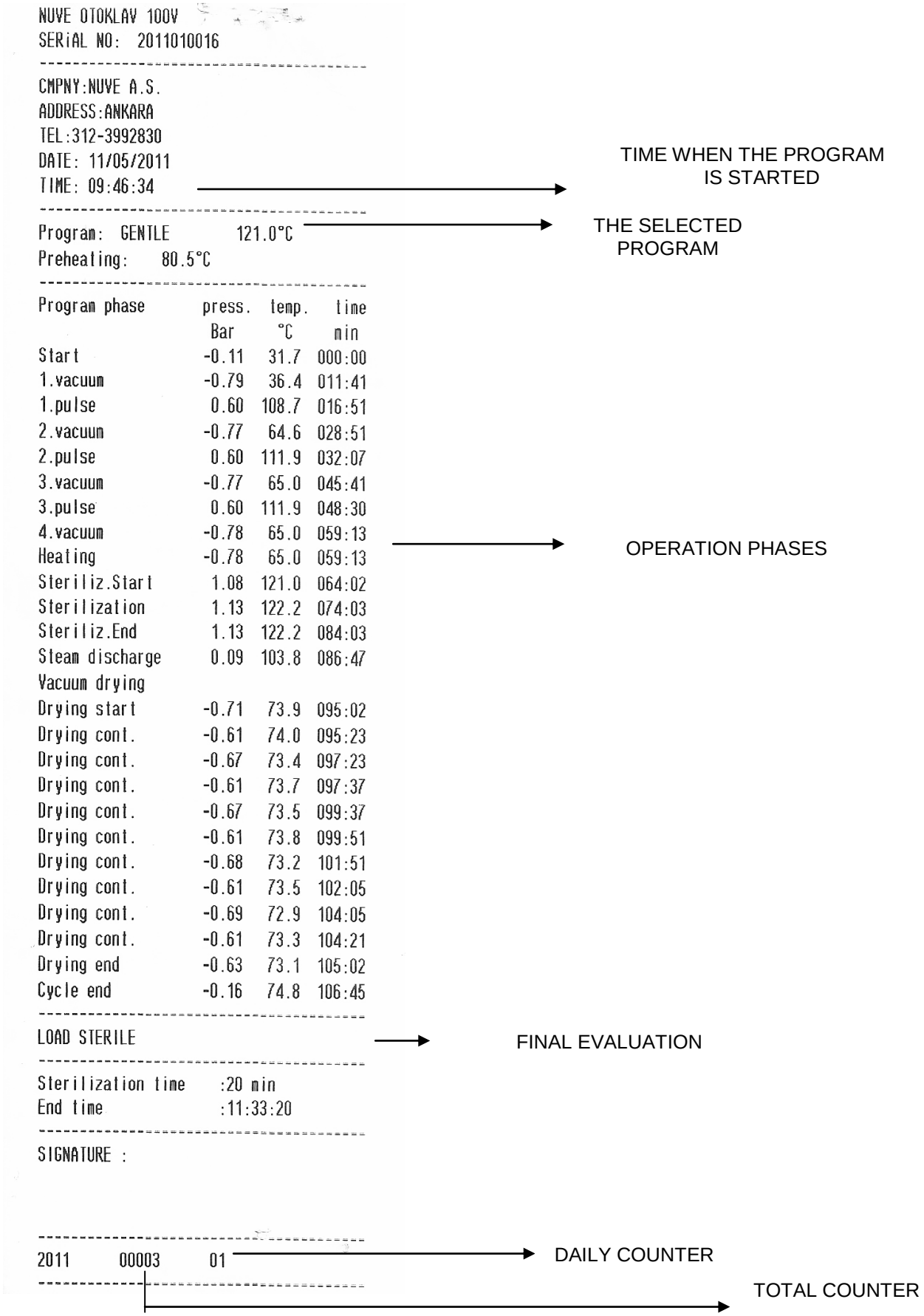
The printer cable should be connected to the RS 232 / printer port (See Section 5.4) located on the left side of the unit to print out the following data during a cycle:

- Date and time
- Selected program
- Pre heating
- Model of the device
- Serial number of the Unit
- User Info
- Temperature
- Pressure
- Time
- Phase Info
- Cycle Info
- Failures

 NuveStore™ SD card writer should be connected over the RS 232 port and activated prior to running a program cycle.

 Printing will start after the program is completed and the print-out will involve the program parameters regarding various predetermined points in the course of the sterilization cycle.

7.6.1. Sample Report



NUVE OTOKLAV 100V
SERiAL NO: 2011010016

CMPNY:NUVE A.S.
ADDRESS:ANKARA
TEL:312-3992830
DATE: 11/05/2011
TIME: 09:46:34

TIME WHEN THE PROGRAM IS STARTED

Program: GENTLE 121.0°C
Preheating: 80.5°C

THE SELECTED PROGRAM

Program phase	press. Bar	temp. °C	time min
Start	-0.11	31.7	000:00
1.vacuum	-0.79	36.4	011:41
1.pulse	0.60	108.7	016:51
2.vacuum	-0.77	64.6	028:51
2.pulse	0.60	111.9	032:07
3.vacuum	-0.77	65.0	045:41
3.pulse	0.60	111.9	048:30
4.vacuum	-0.78	65.0	059:13
Heating	-0.78	65.0	059:13
Steriliz.Start	1.08	121.0	064:02
Sterilization	1.13	122.2	074:03
Steriliz.End	1.13	122.2	084:03
Steam discharge	0.09	103.8	086:47
Vacuum drying			
Drying start	-0.71	73.9	095:02
Drying cont.	-0.61	74.0	095:23
Drying cont.	-0.67	73.4	097:23
Drying cont.	-0.61	73.7	097:37
Drying cont.	-0.67	73.5	099:37
Drying cont.	-0.61	73.8	099:51
Drying cont.	-0.68	73.2	101:51
Drying cont.	-0.61	73.5	102:05
Drying cont.	-0.69	72.9	104:05
Drying cont.	-0.61	73.3	104:21
Drying end	-0.63	73.1	105:02
Cycle end	-0.16	74.8	106:45

OPERATION PHASES

LOAD STERILE

FINAL EVALUATION

Sterilization time :20 min
End time :11:33:20

SIGNATURE :

2011 00003 01

DAILY COUNTER

TOTAL COUNTER

7.6.2. NuveSteamArt™ Software and PC Connection

NuveSteamArt™ Software operates with Windows™ operating system.

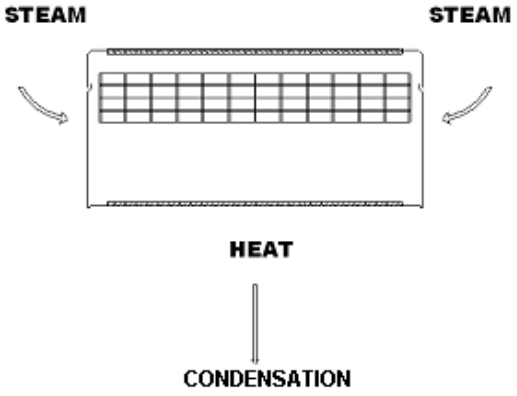
- Connect the RS232 cable of your computer to the RS 232 / printer port (See Section 2.2) located on the left side of the unit. Use the CD which is given with the device.
- Place the CD provided with the unit to the CD driver of your computer.
- Click the “INSTALL” icon appearing on your monitor.
- Follow the guidelines to install the program.
- Run the installed program

7.7. Instructions For Drying

OT 100V provides very good drying conditions for sterilized items. Particularly difficult drying tasks (e.g. double wrapping) can also be performed by means of the supplementary drying function and the automatic pre-heating. Please read the following sections, which may help you to optimize your drying results.

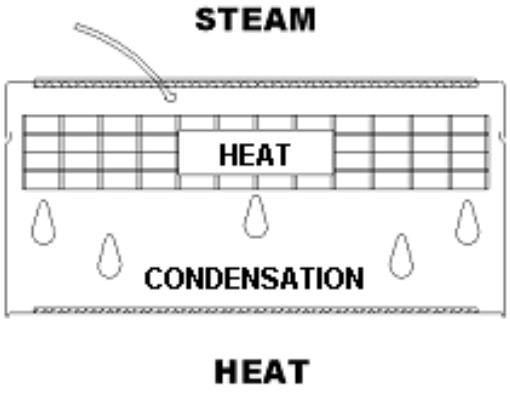
7.7.1. Drying in Sterilization Containers

For steam sterilizers, steam is produced by heating water. The steam transfers heat energy to heat the loads and sterilization container. This leads to steam condensing on the instruments and containers.



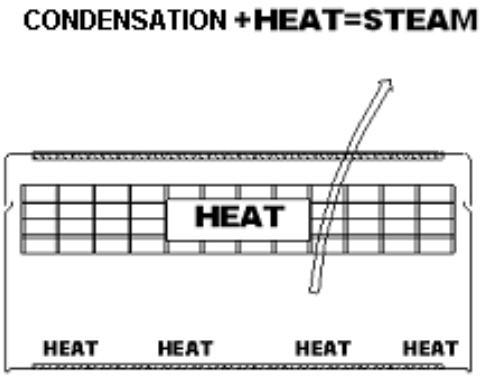
Formation of condensation on the sterilization container

The steam also heats the objects contained in the sterilization containers. Condensation forms on the objects being sterilized, and some of the condensation drops to the bottom of the sterilization container.



Formation of condensation on sterilized objects

After sterilization, during the drying phase, all the condensation must eliminated from the sterilization container and from the sterilized items themselves. This is achieved by the transfer to the condensate of heat stored in the walls of the sterilization container and in the sterilized items themselves. It is preferable that the sterilization container be made of aluminium, as this metal stores and conducts heat well, ensuring faster drying than other materials.

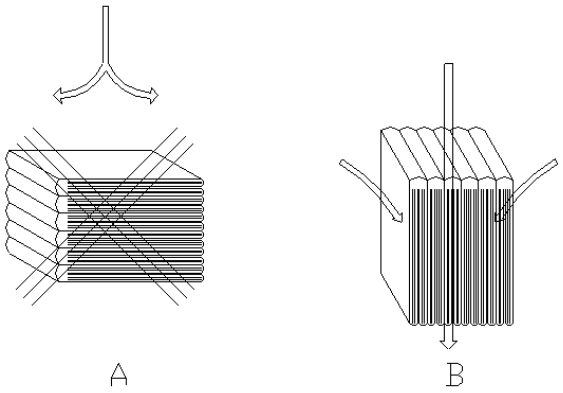


Drying

For efficient drying it is essential that surplus heat be transferred to the objects which have been sterilized. In addition, the condensation must be eliminated from sterilization containers.

7.7.2. Textiles

When preparing textiles for sterilization, pay special attention that the folds in the textiles should be arranged in parallel, and that the items are packed side by side. This vertical configuration ensures that channels can form between the textile folds for the air to flow out and steam to flow in. Do not stack textiles on the top each other as this blocks the penetration of steam into the packages of textiles.



Loading textiles properly

When loading sterilization containers with textile items, pay special attention that they retain their vertical orientation, but that the items are not pressed together. This would prevent the formation of flow channels for air and steam. If the packages of textiles cannot be kept upright, then it might be advisable to wrap them in sterilization paper. The textiles must not touch the sides or the base of the sterilization container, since they might become saturated with condensate.

For good drying results, the textiles should also be as dry as possible when they are placed in the steam sterilizer. The heat stored in the chamber and sterilization container may not otherwise be sufficient to evaporate both the moisture and the condensation.

7.7.3. Instruments

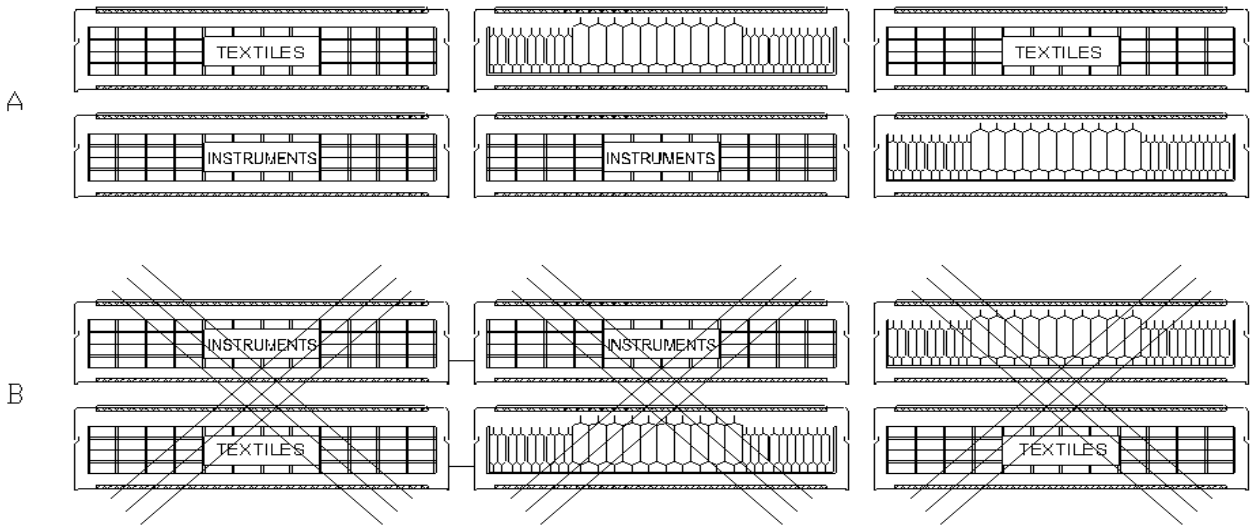
Where appropriate instruments should be disassembled before placing them in the steam sterilizer, as this will improve the drying results.

The use of lubricants (such as instrument oil) should be avoided unless absolutely necessary .Prior confirmation should be obtained from the manufacturer of such agents if they are suitable for steam sterilization. Substances which are hydrophobic or impenetrable for steam can not only lead to poor drying results, but may also mean that the steam sterilization is unsuccessful , since not only the instruments are protected but also micro-organisms.

7.7.4. Loading The Steam Sterilizer

Textiles and instruments should not be sterilized together in one sterilization container and also in separate sterilization containers. However, this condition is unavoidable for economic or other reasons; the following rules should be observed:

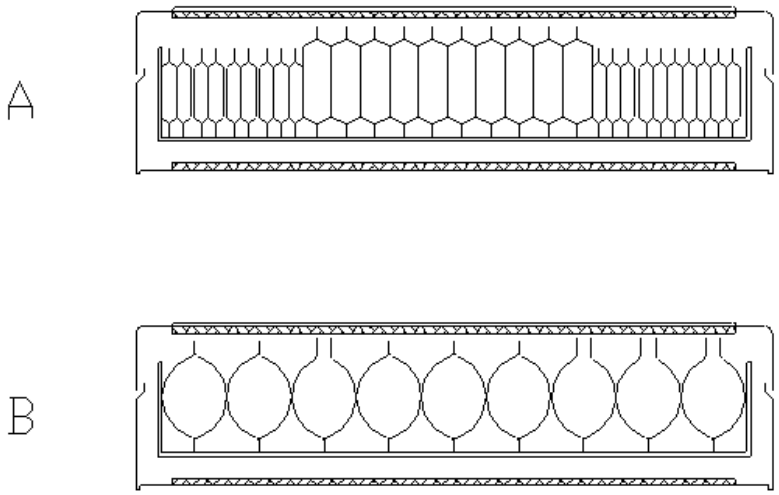
- Instruments and sterilization containers should be placed at the bottom
- Textiles should always be placed at the top
- Transparent sterilization packages and paper sterilization packages should be placed at the top (except when in combination with textiles, in which case they must be at the bottom)



Loading the steam sterilizer

7.7.5. Loading Containers with Soft Sterilization Packing Material

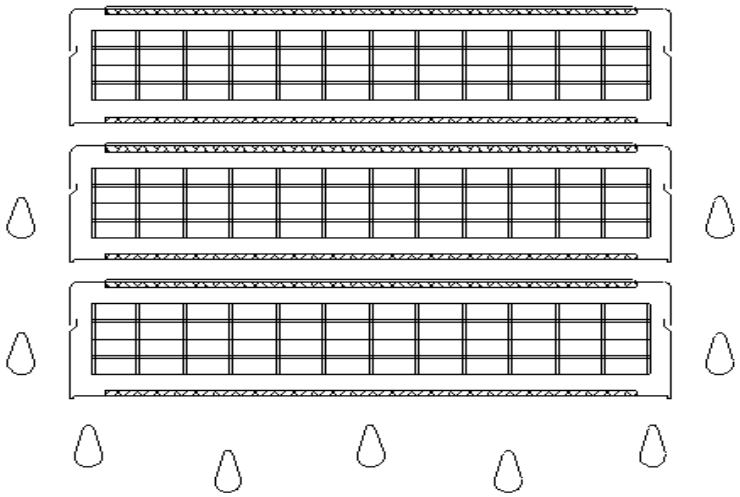
“Soft” sterilization packages such as paper bags or transparent sterilization packages can be sterilized either in sterilization containers or sterilization baskets. For better drying, arrange such soft sterilization packages side-by-side and close to each other. This allows condensation to run off the packages, while at the same time preventing time from expanded excessively, and possibly bursting at the seams.



Packing “soft” sterilization packages in sterilization containers

7.7.6. Stacking Sterilization Containers

When arranging sterilization containers, pay special attention that drops of condensation do not wet items being sterilized beneath, but can flow away to the base of the chamber. The best arrangement is to use same size sterilization containers, so that condensate can flow down the sides.



Stacked sterilization containers

7.7.7. Removing The Sterilized Items

After the sterilization process, some condensation may remain on the sterilized items. However, heat transfer from the sterilized objects can evaporate that after the sterilization process has been completed.

The German standard DIN 58953 Part 7 Section 7 comments on residual moisture on paper bags or transparent sterilization paper after sterilization:

“Small amounts of water on the surface of packages do not represent a cause for concern if they dry completely within thirty minutes after removal from a steam sterilization system...”

After the sterilization is completed, if there is small amount of water on the surface of the packages, it will help to open the lid for 3-5 cm to dry the water drops.

7.7.8. Improving The Drying

The drying can be improved by the following measures:

- Pre-heating the autoclave (empty sterilization)
- Arranging transparent sterilization and paper packing vertically

8. CLEANING AND PERIODICAL MAINTENANCE

8.1. Periodical Maintenance

- Security valves which have a direct contact with the pressure should be changed in every 6 years by authorized personnel.
- The door gasket shall be replaced by the authorized personnel after each 1000 cycles or in every six months.
- The air filter should be replaced after in every 500 cycles.
- It is recommended that the Bowie&Dick Test shall be performed weekly, while the Vacuum Test shall be executed at the beginning of every working day while the chamber is not yet heated; to assure efficient functioning of the unit.

8.2. Cleaning

- Daily cleaning process is required. Wipe the sterilization chamber gasket and inner surface with a damp cloth. You may use soft liquid soap against difficult dirt and dust.
- Check the chamber before every use. Make the necessary cleaning, if needed.
- Be aware of the adverse effects of the chemical cleaners and be careful while using them.
- The chamber shall be checked before each and every sterilization loading against any contamination; and shall be immediately cleaned if needed.
- The sterilization load should have been disinfected prior to placement into the sterilization chamber.
- Filters should be checked regularly and cleaned once a week.

 Cleaning shall be performed while the chamber is cold.

9. DISPOSAL MANAGEMENT CONCEPT

The currently valid local regulations governing disposal must be observed. It is in the responsibility of the user to arrange proper disposal of the individual components.
Applicable local regulations for disposal have to be carefully observed.
The instruments and electronic accessories (without batteries, power packs etc.) must be disposed off according to the regulations for the disposal of electronic components.
Batteries, power packs and similar power source have to be dismounted from electric/electronic parts and disposed off in accordance with applicable local regulations.

10. TROUBLESHOOTING

If the steam sterilizer fails to operate check that,

- The mains power switch is on,
- The plug is plugged-in properly,
- The plug is not defective,
- The fuse of the installation on which the plug is mounted is not defective,
- The mains supply is present,

10.1. Error Codes and Explanations

- The Error Codes may appear immediately after the unit is turned on or following a time lag after the unit is turned on, before any program is started.
- The Error Codes may appear immediately after a program is started or while the program is running.
- These messages are accompanied by an alarm tone which can be muted by the “stop” button.

In case the error has occurred during a running program execution; the unit stops the program and either releases steam or vents the chamber according to the pressure conditions in the chamber.

 During the operation, an error code means that **sterilization is not completed and the load is not sterile**. The sterilization must be repeated.

 If an error occurs after the sterilization phase, this means **the load is sterile** but **it may wet** because of not drying.

Error 01: Vacuum Time Exceeded
The system pressure has not dropped to the required vacuum value within preset duration.

Error03: Steam Discharge
The steam in the chamber has not been released within the preset time following the sterilization phase.

Error 04: Air intake
Following the drying phase, the airflow rate is below the preset value.

Error 06: Door Open
Door lock has been released during operation.

Error 07: Steam Generator-Over Heating
Steam generator is overheated.

Error 08: Door Lock
The duration for door locking has exceeded the preset time.

Error 09: Water Failure
Water level is in the minimum level inside the water tank and steam generator.

Error 10: Sensor Failure PT1, PT2, PT3, BT1, BT2
The nominated sensor is defected.

Error 11: Pre-Heating
The duration for pre-heating has exceeded the preset time.

Error 12: Pre-Heating High Temperature
The maximum pre-heating temperature has been exceeded.

Error 16: Power Failure
The mains supply has interrupted during a cycle.

 If the power failure occurs during the sterilization phase, the chamber temperature will be checked after the power is on. If the temperature is not risky for the sterilization, the operation will continue from where it stopped, otherwise it will stop. If the power failure occurs before or after the sterilization phase, the operation is stopped and the warning comes out both visual and audible.

Error 17: Heater Failure
Steam generator's heaters are defective.

Error 18: High Generator Pressure
Generator pressure exceeds the maximum permitted pressure.

Error 19: Low Temperature
The temperature in the chamber remains below the preset temperature after the sterilization phase has started.

Error 20: High Temperature
The sterilization temperature exceeds the maximum permitted temperature.

Error 21: Low Pressure
The pressure in the chamber remains below the preset pressure after the sterilization phase has started.

Error 22: High Pressure
The sterilization pressure exceeds the maximum permitted pressure.

 **PLEASE CONTACT THE NEAREST AUTHORIZED NUVE SERVICE IN CASE OF ANY ERROR**

11. ELECTRICAL CIRCUIT DIAGRAM