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OPERATOR'S MANUAL
C-17S / C-22S / C-28S / C-17 / C-22 / C-28

EN

CASTELLINI
PASSION FOR DENTISTRY
Since 1935

CEFLA S.C. VIA SELICE PROVINCIALE 23/A - 40026 IMOLA (BO) ITALY
PLANT: VIA BICOCCA 14/C - 40026 IMOLA (BO) - ITALY

INDICE

1. FOREWORD

The instructions inform the user on how to properly operate the device. It is extremely important to read this manual carefully and thoroughly before using the device.
This publication must not be reproduced, copied or transferred in any manner (electronically, mechanically, via photocopies, translations or other means) without the prior written consent of the manufacturer.
The manufacturer has a company policy of continual development. Therefore, some of the instructions, specifications and figures given in this manual may slightly differ from the purchased product. The manufacturer reserves the right to make changes to this manual without giving prior notice.
The original text is in Italian; this is a translation from the original in Italian.

1.1. SYMBOLS USED

NOTE:
Pay particular attention to the paragraphs marked with the symbol shown.

CAUTION:
Potential danger for people, environment and property.
Follow the procedures indicated in the manual to prevent potential damage to materials, devices and/or property.

1.2. SYMBOLS ON THE DEVICE

Potential danger due to high temperature.

Device in compliance with the essential requirements of (EU) Regulation 2017/745 on Medical devices.
Notified body: IMQ spa

Device compliant with the requirements set out in the Directive 2014/68/EU (PED) - category I for 17 l sterilizers; category II for 22 and 28 l sterilizers.
Notified body: Rina Services S.p.A.

ON/OFF switch.

The operator's manual is provided in electronic format.

Refer to the user manual.

Serial number of the equipment.

Product/equipment identification code.

Unique identifier of the device.

Disposal symbol in accordance with Directive 2012/19/EU.

Caution!

Ukrainian national symbol of conformity.

Fuses 2xT15A 250V.

Medical device.

Manufacturer.

Manufacturing date of the equipment.

Model number.

Product handling instructions.

1.3. STANDARDS AND REGULATIONS

The product described in this manual is manufactured in accordance with the highest safety standards and doesn't represent any danger for the operator if used according to the following instructions. The product is **compliant** with the following **European Directives and Regulations as applicable**:

Regulation (EU) 2017/745,	(EU) Regulation 2017/745 on Medical devices.
2011/65/EU,	(**Rohs II**) on restriction of hazardous substances in electrical and electronic devices.
2014/68/EU	Pressure Equipment Directive (PED)

Technical standards:
- **EN 13060:2014 + A1:2018** – Small steam sterilizers
- **IEC 61326-1:2020** – Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
- **CISPR 11:2015 + AMD1:2016 + AMD2:2019** – Industrial scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
- **IEC 61000-4-2:2008** – Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
- **IEC 61000-4-3:2006 + AMD1:2007 + AMD2:2010** – Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
- **IEC 61000-4-4:2012** – Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- **IEC 61000-4-5:2014 + AMD1:2017** – Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test
- **IEC 61000-4-6:2013** – Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- **IEC 61000-4-8:2009** – Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
- **IEC 61000-4-11:2020** – Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase

1.4. CLASSIFICATION

Medical devices classification
Classification of the device according to the rules laid down in Annex VIII to Regulation (EU) 2017/745: **CLASS IIB**.

EMC classification
The device complies with **CISPR 11 Group 1, Class B** emission limits and meets the applicable immunity requirements of IEC 61326-1:2020 standard for **basic electromagnetic environments.**

1.5. INTENDED USE

The devices covered by this manual are small sterilizers intended for steam sterilization of invasive and non-invasive medical devices, such as reusable surgical instruments and materials.

DEVICE INTENDED FOR PROFESSIONAL USE

The use of the device is strictly reserved to qualified personnel. It must never be used or handled by untrained and/or unauthorised persons.
The device must not be used for the sterilization of fluids, liquids or pharmaceutical products.

The sterilizer is not a mobile or portable device

1.5.1. IMPORTANT NOTES

Information contained in this manual are subject to change without notice.
The manufacturer is not responsible for direct, indirect or accidental damage resulting from or relating to the provision or use of this information.
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1.6. GENERAL WARNINGS

When using this product, **always** follow the instructions in the manual and never use it for anything other than its intended purpose.

The user is responsible for any legal requirements relating to the installation and use of the product. The manufacturer will not be held responsible for any breakage, malfunction, property damage or injury to people in the event that the product is not installed or used correctly, or proper maintenance is not carried out.

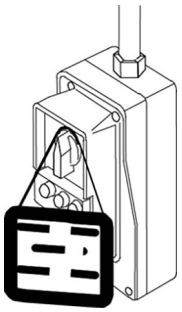
For operators in Europe: any serious accident occurred in relation to the device must be reported to Cefla s.c. and to the competent authority of the Member State where the user and/or patient lives.

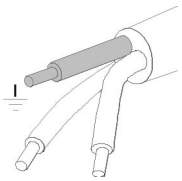
Please observe the following precautions in order to avoid injury or property damage:
- Use ONLY demineralised and/or distilled water of high quality.

The use of water of inadequate quality can severely damage the device.
See technical characteristics appendix in this regard.

- **Do not** pour water or other fluids on the device;
- **Do not** pour flammable substances on the device;
- **Do not** use the system in the presence of flammable or explosive gases or vapours;
- Before performing any maintenance or cleaning intervention, **ALWAYS DISCONNECT** power supply;

Whenever it is not possible to disconnect the power supply from the device, or if the external mains switch is distant or not visible to the maintenance technician, place a "work in progress" sign on the external mains switch after having turned it off.





- Make sure the electrical system is grounded according to current laws and/ or standards;
- **Do not** remove any label or nameplate from the device; request new ones, if necessary;
- Use **only original spare parts**.

Failure to comply with the above exempts the manufacturer from all liability.

1.7. RESIDUAL RISKS

FOR THE USER
- Contamination due to improper handling of the load;
- Burn by contact with hot surfaces or fluids.

FOR THE PATIENT
- Contamination due to unsterilized material caused by wrong cleaning treatment before sterilization;
- Contamination due to implementation of a wrong reuse process;
- Contamination due to material unsuitable to sterilization or not compliant with instructions for use;
- Contamination due to unsterilized material caused by wrong final assessment of sterilization process;
- Contamination due to missing or wrong scheduled maintenance;
- Contamination due to missing periodic validation.

1.8. INFORMATION ON MITIGATION OF RESIDUAL RISKS

FOR THE USER

Contamination due to improper handling of the load.

See chapter PREPARING THE MATERIAL.

Burn by contact with hot surfaces or fluids.

To extract the sterile material, once the sterilization process has been completed with saturated steam at 121° or 134°, proceed as follows:

- Always wear PPE suitable for the handling of hot material and gloves of appropriate material and thickness;
- Clean your gloved hands with a germicide detergent;
- Always use the special tool, supplied as standard, to extract the trays from the sterilization chamber;
- Avoid any contact of trays and material with contaminated and/or non-heat-resistant surfaces;
- Handle the sterile material making sure not to damage any packages, bags and containers serving as a barrier.

FOR THE PATIENT

Contamination due to unsterilized material caused by wrong cleaning treatment before sterilization.

See chapter TREATING THE MATERIAL BEFORE STERILIZATION.

Contamination due to implementation of a wrong reuse process.

Make sure to use sterile material.

Contamination due to material unsuitable to sterilization or not compliant with instructions for use.

- Check that the contaminated material is compatible with the selected sterilization process;
- Immediately separate the materials to be sterilized from those that must not be subjected to such process or are not able to withstand it.

Contamination due to unsterilized material caused by wrong final assessment of sterilization process.

The sterilization process electronic control system monitors the various phases, at the same time checking that the various parameters are respected; if any type of anomaly is encountered during the cycle, the program is immediately interrupted, generating an alarm identified by a code, with a relative message explaining the nature of the problem.
Furthermore, the sterilization process can be checked by means of:

CHEMICAL INDICATORS

that monitor the sterilization process by providing information, together with the control of physical and biological parameters, on the conditions occurred in the sterilization chamber during the process.
The final toning of the process indicator does not certify that the product is sterile but only that the device has been subjected to a sterilization process. If the toning does not occur, the operator in charge of releasing the sterile material, that must not be used, must find out why.

PHYSICAL INDICATORS

They include the reading of machine data and the execution of specific tests indicated during the validation phase for that specific cycle/load/autoclave. This control system can include:

- Direct reading of the synoptic system (thermometer, pressure gauge, recorder, etc.);
- Reading of prints/labels/files on which the data detected by the synoptic system are stored (parameters);
- Execution of specific tests (Vacuum Test, Bowie & Dick Test, Helix Test).

The operator in charge of the process certifies the validity of the load at the end of every cycle by means of the parametric release.

Contamination due to missing or wrong scheduled maintenance.

The sterilizer, based on a preset programming, displays a warning message relating to the scheduled maintenance necessary to ensure the good operation of the device.

Contamination due to missing periodic validation.

See chapter PERIODIC STERILIZER VALIDATION.

1.9. ELECTROMAGNETIC SAFETY

Applied standard and expected electromagnetic environment
This device complies with the EMC requirements specified in **IEC 61326-1:2020**.
This is intended to be used in a **basic electromagnetic environment**. This environment typically includes residential, commercial and light industrial locations, characterised by being directly supplied from the public low-voltage power supply network.
The equipment is classified as **Group 1** and **Class B** according to **CISPR 11**. This classification indicates that the equipment is suitable to be used in domestic environments and can be used in any location, including residential environments, even when connected directly to the public low-voltage power supply network.

Warning on emissions when connected to a test object: when the device is connected to a test object, emissions exceeding the threshold required by IEC 61326-1 may occur.
In order to keep compliance with EMC standards and avoid electromagnetic interference with other equipment, operators must ensure that the device is installed and used in accordance with the instructions provided.

Information on electromagnetic emissions		
The product meets the emission requirements for Class B equipment according to CISPR 11. For Group 1 and Class B equipment, the thresholds, measurement methods and provisions specified in sub-clause 6.2 of CISPR 11:2015/AMD1:2016/AMD2:2019 apply.		
Emission test	**Compliance**	**Electromagnetic environment**
RF emissions	Group 1	Equipment in which radio frequency energy is intentionally generated and/or used in a conductively coupled manner, necessary for the internal operation of the equipment itself.
CISPR 11	Class B	Equipment suitable to be used in residential environments and in structures directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes.
Requirement	**Applicable standard**	**Result**
Disturbance voltage (Conducted emissions)	**CISPR 11** (clause 7.2 of IEC 61326-1:2020 standard)	P
Disturbance due to electromagnetic radiation (Radiated emissions)	**CISPR 11** (clause 7.2 of IEC 61326-1:2020 standard)	P

Performance levels under electromagnetic immunity conditions
Immunity tests were conducted in accordance with **performance criteria A and B** of IEC 61326-1:
- **Performance criterion A:** The equipment shall continue to operate as intended during and after the test. No performance degradation or loss of functionality below a performance level specified in the user documentation is allowed. In the case of continuous electromagnetic phenomena, an allowable performance loss can be tolerated if the equipment recovers without user intervention and this is clearly documented. No changes in operating status or loss of data are allowed.
- **Performance criterion B:** The equipment shall continue to operate as intended after the test. No performance degradation or loss of functionality below a performance level is allowed. During testing, an acceptable loss of performance is permitted if detailed in the EMC test plan. An unintentional change in operating status is allowed if it can be self-recovered. No loss of stored data is allowed.

The sterilizer is suitable to be used in the specified electromagnetic environment. The immunity test results have demonstrated that there were no unintended interruptions of the sterilization cycle without having been clearly notified, that no loss of cycle data occurred and that the machine remained responsive.

Requirement (immunity test)	**Applicable standard**	**Result**
Electrostatic discharges (ESD)	**IEC 61000-4-2**	P
Radiated electromagnetic fields, RF	**IEC 61000-4-3**	P
Power frequency magnetic fields	**IEC 61000-4-8**	P
Fast transient/burst	**IEC 61000-4-4**	P
Injected currents (RF common mode)	**IEC 61000-4-6**	P
Overvoltage (Surge Test)	**IEC 61000-4-5**	P
Voltage drops, short interruptions and voltage variations	**IEC 61000-4-11**	P

1.10. NETWORK AND DATA SECURITY

The sterilizer includes an Ethernet connection and a Wi-Fi module that allows connection to the local network and useful services, including device troubleshooting and firmware updates.
The Wi-Fi module supports IEEE 802.11 b, g, n with WEP, WPA2-PSK encryption standards in the 2.4 GHz range.
Since the connection security depends on the wireless infrastructure configuration (router or access point), Wi-Fi connection protection is an important element for data protection.
For maximum safety, make sure your network is configured for WPA2 protection.
Avoid placing devices connected to your network in places that are accessible to the public without surveillance.
When using USB pendrives to download cycle data, check that data are copied to a supervised disk and that back-ups are performed regularly.

Tips for protecting a new network

- Change the default network name (SSID) when installing new access points, routers and gateways.
- Change the administrative credentials (user name and password) that control the settings of your Access point/Router/Gateway.
- Enable Personal WPA2 (also known as WPA2-PSK) with AES encryption on all client devices.
- Create a network passphrase that meets the recommended guidelines.
- Verify that a firewall is enabled and configured correctly.

Checking that an existing network is secure

- If your network is configured for a very old security system (WEP or WPA), it is recommended to switch to WPA2 as soon as possible.
- Select an effective network passphrase. In general, increasing the length, complexity and randomness improves the quality of a passphrase. A passphrase must not contain a word found in a dictionary and must not include personal information (identification number, name, address, etc.).
- Periodically changing the passphrase on the network also increases security.
- Ensure that user access and logs recorded on your infrastructure (PCs, devices, etc.) are managed correctly.
- Verify that a firewall is enabled and configured correctly.

2. CONTENTS OF THE PACKAGE

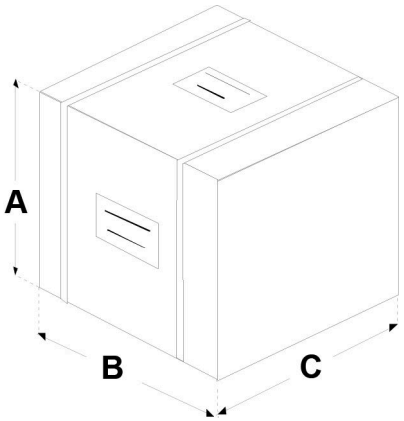
Check the integrity of the product package upon receipt.

2.1. DIMENSIONS AND WEIGHT

Once the package is opened, check that:
- The supply matches the specifications of the order (see the delivery note);
- There is no visible damage to the product.

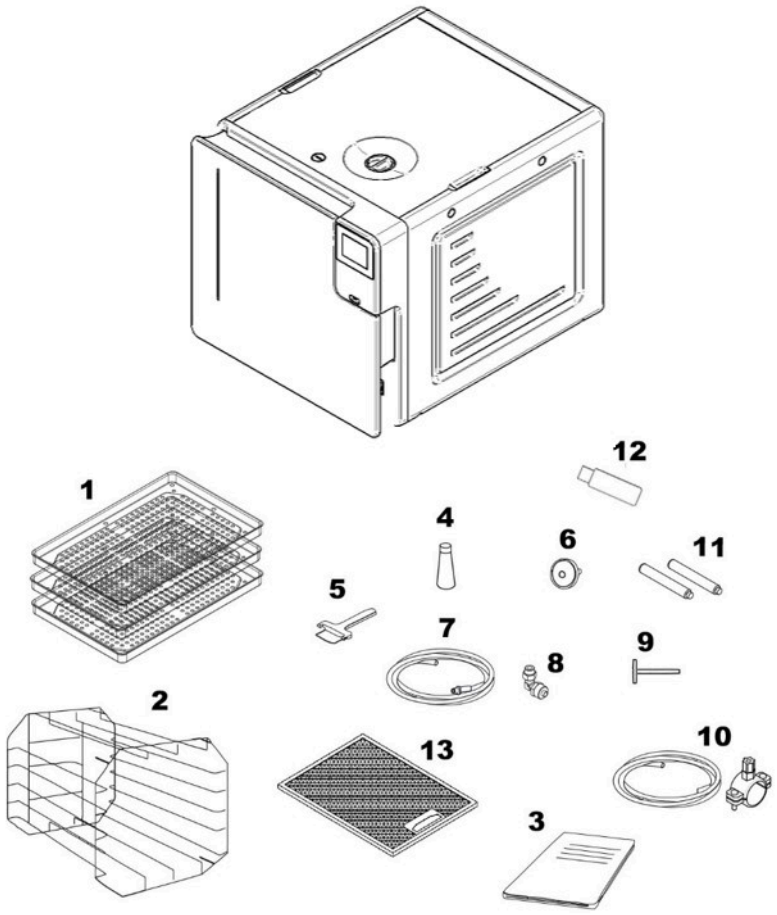
Dimensions and weight

A Height	600 mm
B Width	600 mm
C Depth	700 mm
Total weight	61 kg



In case of wrong delivery, missing parts or any type of damage, inform immediately and in detail the reseller and the carrier that made the delivery.

2.2. DESCRIPTION OF THE CONTENT



In addition to the sterilizer, the package contains:

1 Instrument trays:
- 5 pcs for B 17/22
- 6 pcs for B 28
- 3 pcs for S 17/22

2 Tray holder support;

3 Operator's documentation and safety valve's EC Declaration of Conformity;

4 Lubricant for door locking mechanism;

5 Tray extractor;

6 Additional bacteriological filter;

7 Rubber hose with quick coupling for manual water drainage;

8 Angled union + straight union;

9 T-shape tubular wrench (for door manual unlocking);

10 Plastic tube for direct water drainage, with fastening clamp;

11 Rear spacers.

12 USB key containing: User's Manual.

13 Dust filter.

2.3. PRODUCT HANDLING

The packed product must be handled using, where possible, suitable mechanical means (lift truck, pallet truck, etc.) and following the indications on the package.
In case of manual handling, the product must be lifted by two persons using the suitable available means.
Once the sterilizer has been removed from the package, it must be lifted by two persons using the suitable available means and handled, if possible, using a truck or similar means.

We recommend to transport and store the device at a temperature not below 5°c. Extended exposure to low temperatures may damage the product.

Store the original package and use it for any transport of the device. Using a different package may damage the product during shipping.

Before transport, leave the device turned off for about 30 minutes after the last program finishes and drain the distilled water and used water tanks so that all the internal parts will have time to cool down.

2.4. CONDITIONS FOR STORAGE AND TRANSPORT

TEMPERATURE: between +5° C and +70° C
HUMIDITY: between 20% and 80%
PRESSURE: between 0.7 and 1.1 bar (70 and 110 kPa)

3. GENERAL DESCRIPTION - PRODUCT PRESENTATION

3.1. GENERAL CHARACTERISTICS

The device is an electronic water steam sterilizer, entirely operated by a micro-processor, with a large, printed stainless steel sterilization chamber.
It is characterized by an advanced fractionated vacuum system for the complete removal of air, even from hollow, porous materials, and an effective final vacuum drying phase capable of eliminating all traces of humidity from any load.

The exclusive steam generation system, the effective hydraulic circuit and the electronic management (integrated by high-precision sensors) ensure a high execution speed of the process and an excellent stability of thermodynamic parameters.
Moreover, its Process Evaluation System constantly monitors all the machine “vital” parameters in real-time, guaranteeing absolute safety and a perfect result.

The device offers users 6 sterilization programs (one of which completely programmable), all equipped with customisable, optimised drying for the fast, effective sterilization of the various types of load (instruments and materials) used in a medical environment.
All the cycles can immediately be selected on the clear TOUCH screen, which also allows extensive configuration of the device according to the user’s needs.

Like in the best tradition, also the new range of autoclaves features the most complete and advanced safety systems available today, to ensure the user maximum safety and minimise any potential electrical, mechanical, thermal or functional faults.

For the description of safety devices, refer to technical characteristics appendix.

3.2. TECHNICAL CHARACTERISTICS

3.2.1. SUMMARY TABLE

Device	WATER STEAM STERILIZER		
	17	22	28
Class according to Reg. (EU) 2017/745	IIb		
Manufacturer	Cefla s.c. Headquarters Via Selice Provinciale 23/A – 40026 Imola (BO) IT		
Input voltage	220 V - 240 V~ 50 Hz 220 V - 240 V~ 60 Hz 120V~ 60 Hz (no S models)		
Network fuses (6.3 x 32 mm)	2x T15A 250V		
Electronic board fuse (5 x 20 mm)	F1: T4A 250V (24V DC board input)		
Nominal power	2,300 W 1,440 W (120V~ / 60 Hz)		
Insulation class	Class I		
Installation category (according to EN 61010)	Cat. II		
Operational environment	Indoor use HUMID LOCATION (EN 61010 extended environmental conditions)		
A-weighted sound power level (ISO 3746)	< 67 dB (A)		
Degree of protection (IP code) (EN 60529:1991+A1:2000+A2:2013)	IP21		
Environmental operating conditions	Temperature: +15°C ÷ +35°C Relative humidity: between 20% and 80%, non-condensing Altitude: min 100 m / max. 3,000 m (a.s.l.)		
External dimensions (HxWxD) (rear connections excluded)	490 x 500 x 610 mm		
Net weight: unladen unladen, with tray holder support and trays unladen, with tray holder support, trays and water at MAX level	approx. 43 kg approx. 46 kg approx. 52 kg	approx. 46 kg approx. 49 kg approx. 55 kg	approx. 47 kg approx. 52 kg approx. 56 kg
Sterilization chamber dimensions (D x D)	250 x 350 mm	250 x 450 mm	280 x 450 mm
Sterilization chamber total volume	approx. 17 l (0.017 cu. m)	approx. 22 l (0.022 cu. m)	approx. 28 l (0.028 cu. m)
Sterilization chamber usable volume (with tray holder support inserted)	approx. 10 l (0.010 cu. m)	approx. 13 l (0.013 cu. m)	approx. 19 l (0.019 cu. m)
Sterilization chamber usable dimensions	17 l (1.38x1.55x2.97) dm / 6.4 cu. dm	22 l (1.38x1.55x3.97) dm / 8.5 cu. dm	28 l (1.72x1.66x3.96) dm / 11.3 cu. dm
Distilled water tank capacity (filling)	approx. 6 l (water at MAX level) approx. 1.5 l (water at MIN level)		
Sterilization programs	5 standard programs + 1 program defined by the user		
Test programs	Helix/B&D Test Vacuum Test Vacuum + Helix/B&D Test		
USB connection	USB 2.0 CONNECTION FAT 16/ FAT 32		
Printer connection	Serial RS232 (printer cable max length 2.5 m)		
Printer insulation class:	Class I or Class II		
Printer power supply standard:	Compliant with Standard EN 60950. (The safety of the sterilizer may be compromised in case of uncertified printer power supply unit)		
120 V 60 Hz Main power cord	NEMA 5-15 plug 125 V-15A Cable length 2.5 m C19 connector according to IEC 60320		
220-240 V 50 Hz Main power cord	Plug CEE 7 / VII IEC 250V-16A 50 Hz Cable length 2.5 m C19 connector according to IEC 60320 UL 498, CSA C22.2		

Device	WATER STEAM STERILIZER		
	17	22	28
220 V 60 Hz Main power cord:	NEMA 6-15P plug 250V-15A Cable length 2.5 m C19 connector according to IEC 60320		
Ethernet connection	RJ45 (max. cable length 29 m)		
Wi-Fi	802.11 b/g/n (2.4 GHz); WEP / WPA / WPA2-PSK encryption		
Bacteriological filter (filter element in PTFE)	Porosity: 0.027 microns Connection: male connector 1/8" NPT		
Maximum flow of drained water Temperature of drained water Maximum temperature of drained water	1 l/min. 50° C 90° C		
Total heat in Joule sent by the sterilizer to the surrounding air in 1 hour of continue operation	17 l = 3.6 MJ	22 l = 4 MJ	28 l = 5.4 MJ
Manoeuvre/handling space	1 m x 1 m		

Device	17	22	28
Class (according to PED Directive 2014/68/EU)	Category I	Category II	Category II
Working pressure	-0.8 ÷ 2.4 barg	-0.8 ÷ 2.4 barg	-0.8 ÷ 2.4 barg
Safety device set	2.4 barg	2.4 barg	2.4 barg
PT	500 kPa (abs)	500 kPa (abs)	500 kPa (abs)
PS	2.4 barg	2.4 barg	2.4 barg
TS	10 ÷ 140 °C	10 ÷ 140 °C	10 ÷ 140 °C
Fluid Group	2	2	2

3.3. SAFETY DEVICES

The sterilizer is equipped with the following safety devices for which we provide a brief description of their function:

- **Network fuses (see data in summary table)**
  Protection of the whole device against possible failures of heating elements.
  Action: power supply interruption.
- **Electronic circuit protection fuses (see data in summary table)**
  Protection against possible failures of the primary circuit of the transformer and of low voltage users.
  Action: interruption of one or more low voltage circuits.
- **Thermal circuit-breakers on mains voltage windings**
  Protection against possible overheating of pump motors.
  Action: temporary cut-off (until cooling) of the winding.
- **Safety valve**
  Protection against overpressure in the sterilization chamber.
  Action: release of the steam and restoration of the safety pressure.
- **Safety thermostat with steam generator manual reset**
  Protection against steam generator overheating.
  Action: cut-off of the electricity to the steam generator.
- **Safety thermostat with chamber heating element manual reset**
  Protection against overheating of the heating elements of the container under pressure.
  Action: cut-off of the electricity to the chamber heating element.
- **Door position safety microswitch**
  Confirmation of the correct closing position of the door of the container under pressure.
  Action: signalling of wrong door position.
- **Motor-driven door lock mechanism with electromechanical protection (pressure switch)**
  Protection against accidental opening of the door (even in a blackout).
  Action: prevents accidental opening of the door during a program.
- **Door locking mechanism safety microswitch**
  Striker for the correct closing position of door locking system.
  Action: signalling of failed or wrong operation of door locking mechanism.
- **Self-levelling hydraulic system**
  Plumbing system structure for the spontaneous levelling of the pressure in the case of a manual interruption of the cycle, alarm or blackout.
  Action: automatic restoration of atmospheric pressure in the sterilization chamber.
- **Integrated system for evaluating the sterilization process**
  Continuous verification of the sterilization process parameters entirely managed by microprocessor.
  Action: immediate interruption of the program (in case of malfunction) and generation of alarms.
- **Sterilizer operation monitoring**
  Real-time oversight of all significant parameters when the machine is powered.
  Action: generation of alarm messages (in the case of anomaly) with possible interruption of the cycle.

3.4. WATER SUPPLY CHARACTERISTICS

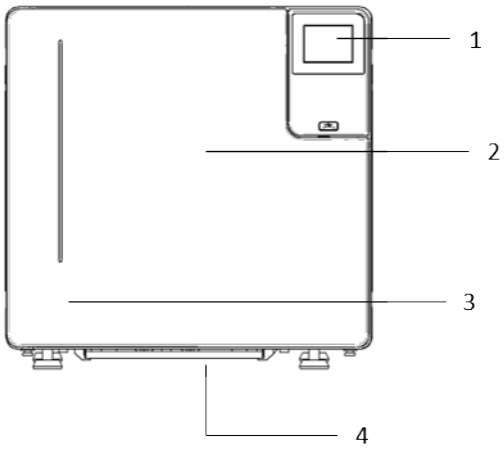
DESCRIPTION	VALUES IN THE WATER SUPPLY	VALUES INSIDE RESIDUAL
DRY CONDENSATE	< 10 mg/l	< 1 mg/l
SILICON OXIDE SiO_2	< 1 mg/l	< 0.1 mg/l
IRON	< 0.2 mg/l	< 0.1 mg/l
CADMIUM	< 0.005 mg/l	< 0.005 mg/l
LEAD	< 0.05 mg/l	< 0.05 mg/l
HEAVY METAL RESIDUES (iron, cadmium and lead excluded)	< 0.1 mg/l	< 0.1 mg/l
CHLORIDES	< 2 mg/l	< 0.1 mg/l
PHOSPHATES	< 0.5 mg/l	< 0.1 mg/l
CONDUCTIVITY AT 20°C	< 15 µS/cm	< 3 µS/cm
pH	5 - 7	5 - 7
ASPECT	colourless, transparent, without sediment	colourless, transparent, without sediment
HARDNESS	< 0.02 mmol/l	< 0.02 mmol/l

When buying distilled water, make always sure that the quality and characteristics declared by the manufacturer are compatible with those specified in the table.

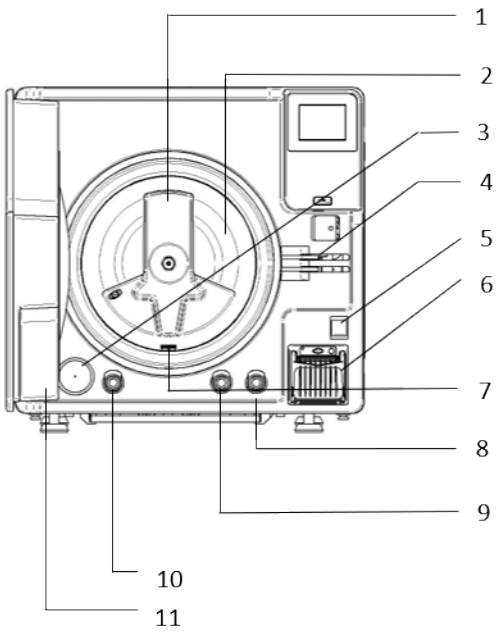
The use of water for steam generation with contaminant levels exceeding those indicated in the above table can greatly shorten the sterilizer lifetime.
This could also result in an increase of oxidation in the most sensitive materials as well as in an increase of limescale residues on generator, boiler, internal supports, trays and instruments.

3.5. FRONT SIDE

1 TOUCH control panel
2 Door
3 Model
4 Dust filter

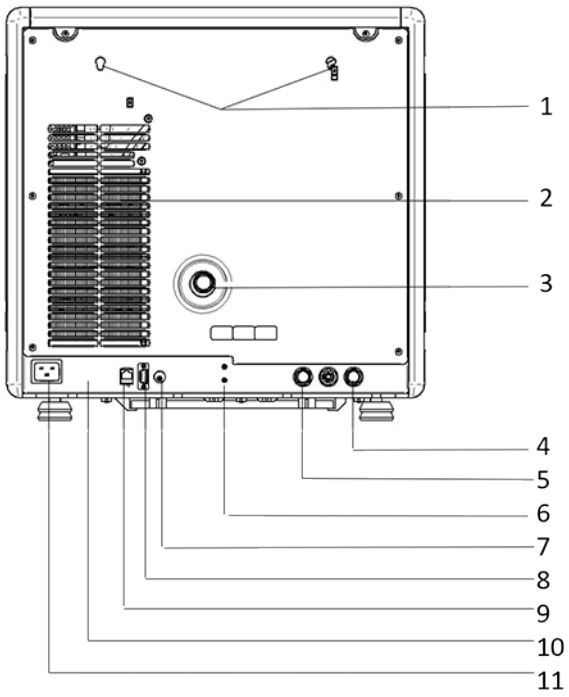


1 Steam diffuser
2 Sterilization chamber
3 Bacteriological filter
4 Door locking system
5 Power switch
6 Printer (optional)
7 Chamber drain filter
8 Distilled water top-up quick coupling
9 Distilled water drainage quick coupling
10 Waste water drainage quick connector
11 Door

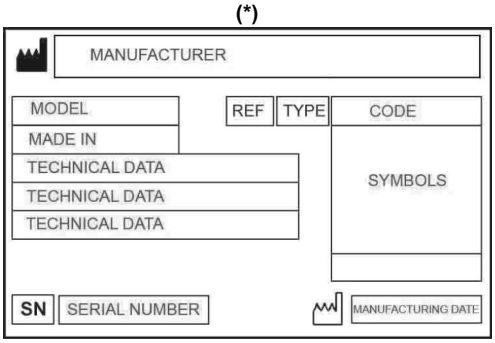


3.6. REAR SIDE

1 Fastening slots for rear spacers
2 Heat exchanger
3 Safety valve
4 Connection for direct water drainage
5 Connection for automatic distilled water filling (only for PURE 100 / 500, external pump kit and EV AUX kit)
6 Mains fuse holder fastening screws
7 Electrical connection for automatic filling (only for PURE 100 / 500, and automatic filling accessory kit and EV AUX kit)
8 Serial cable connection
9 Ethernet cable connection (max. length 29 m)
10 Data plate
SERIAL NUMBER LABEL (See image *)
11 Power cable connection



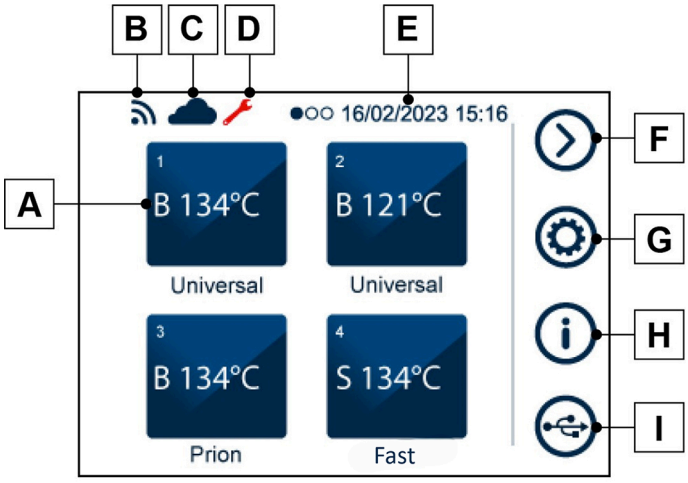
(*)



3.7. DISPLAY ICONS

The screens in the following pictures may vary in shapes and colours, but their contents are the same as shown on the sterilizer display.

A Sterilization cycles
B Wi-Fi status
C Cloud status
D General maintenance status
E Date/Time
F Menu selection button
G Settings
H Sterilizer information
I Link to download New cycles to USB



Other particular symbols relating to the various conditions of use will be described in the relative paragraphs.

3.8. DESCRIPTION OF A STERILIZATION CYCLE

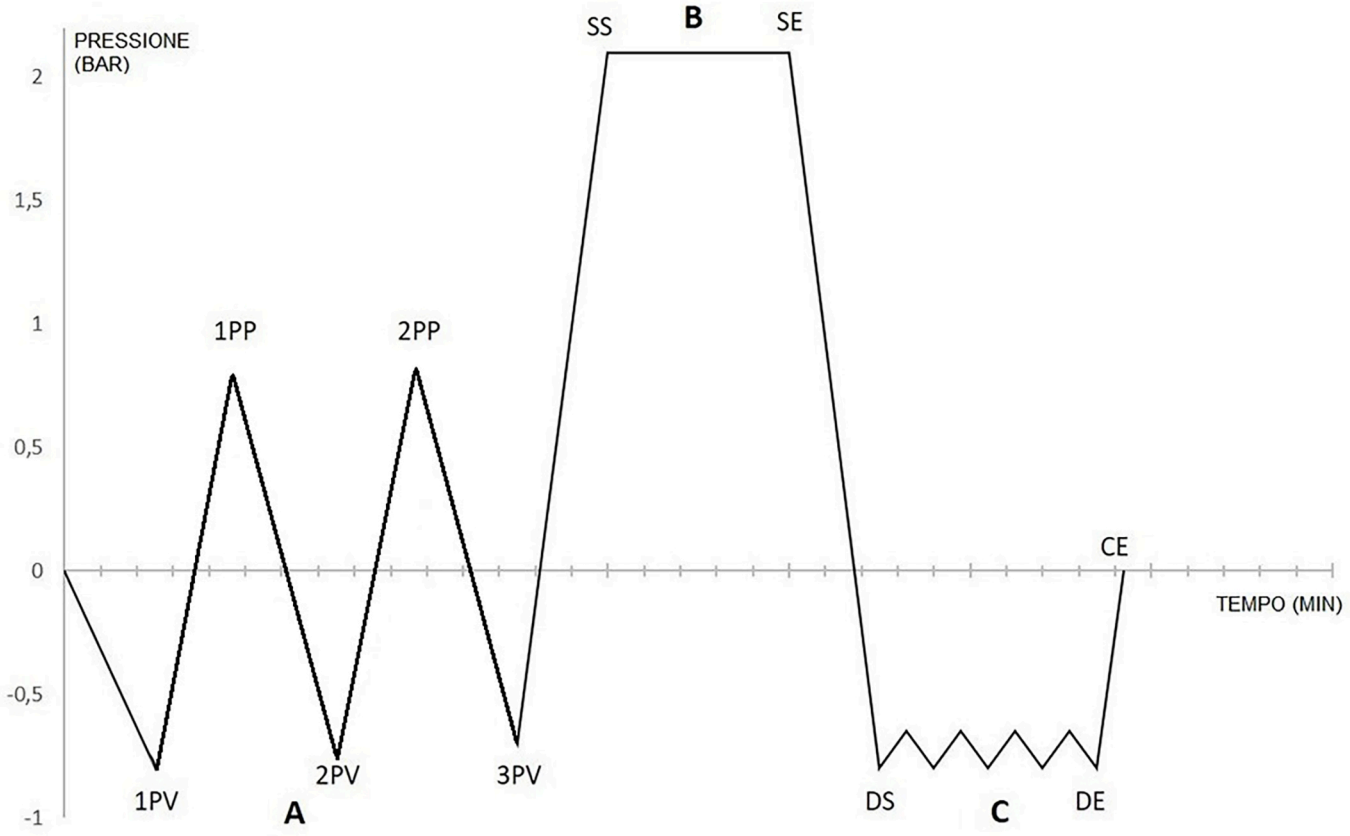
The sterilization program of the sterilizers can be effectively described as a succession of phases, each one having a dedicated function.

For example, the universal program (cycle B, 134°C - 4'): after loading the material in the chamber, closing the door, selecting the program and starting the cycle (after locking the door opening mechanism), the following sequence will be suggested (see the graph below):

1 Preheating the generator and sterilization chamber;
2 Removing the air and penetration of steam in the material through a series of vacuum (extraction of the fluid from the sterilization chamber) and pressure (injection of steam into the chamber) phases;
3 Raising the pressure, with the consequent increase in the temperature of the steam, until reaching the conditions required for sterilization (in the example, 134°C);
4 Stabilizing the pressure and temperature;
5 Sterilizing for the required time (in the example, 4 minutes);
6 Depressurizing the sterilization chamber;
7 Vacuum-drying phase;
8 Ventilating the load with sterile air;
9 Bringing the pressure of the sterilization chamber back to the atmospheric level.

Having reached this last phase, you can unlock the door and remove the load from the sterilization chamber.

It should be emphasized that phases 1, 3, 4, 6 and 9 are identical in all cycles, with slight variations of duration that are solely dependent on the quantity and consistency of the load and the heating conditions of the sterilizer while phases 2, 5, 7 and 8 clearly vary their configuration and/or duration on the basis of the cycle selected (and, as a consequence, the type of load) and the choices made by the user.



A	FRACTIONATED VACUUM	**2PV**	SECOND VACUUM PULSE	**DS**	DRYING START
B	PROCESS	**2PP**	SECOND PRESSURE PULSE	**DE**	DRYING END
C	VACUUM DRYING	**3PV**	THIRD VACUUM PULSE	**CE**	CYCLE END
1PV	FIRST VACUUM PULSE	**SS**	STERILIZATION START		
1PP	FIRST PRESSURE PULSE	**SE**	STERILIZATION END		

Please refer to the programs appendix for more details on programs.

4. INSTALLATION

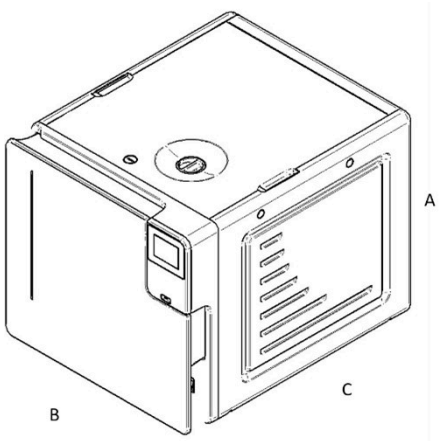
The safety of every system which integrates the device is responsibility of the system assembler.

The first and essential step for a proper operation of the sterilizer, its durability over time and complete use of its features is a correct and careful commissioning. Moreover, this precaution will avoid the danger of physical injury or property damage, not to mention malfunctions and damage to the device.
Please follow **meticulously** the instructions contained hereafter in this chapter.

Technical service department (see appendix) is available for any doubt or further information. The sterilizer is placed on the marked only after having passed all the checks required. It does not require any additional calibration for commissioning.

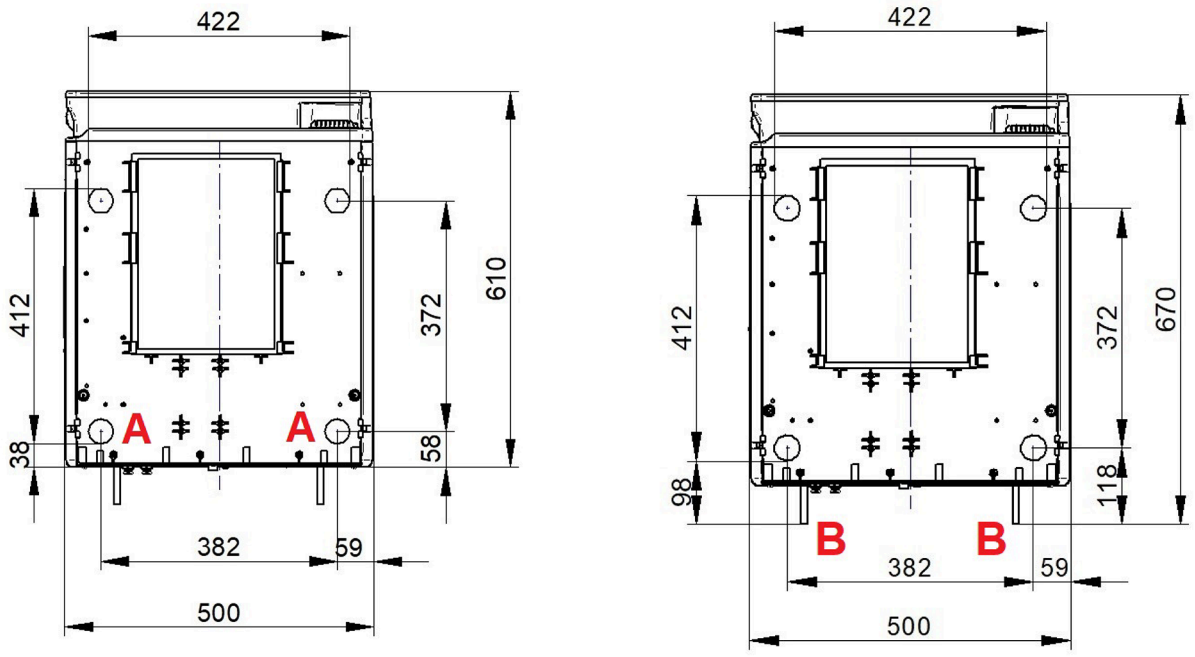
Dimensions and weight	17	22	28
A Height (total)	490 mm		
B Width (total)	500 mm		
C Depth (excluding rear unions)*	610 mm		
Total weight	46 kg	49 kg	52 kg

**The sterilizer can be positioned on a surface only 550 mm deep*



4.1. OVERALL DIMENSIONS

Centre distance and maximum overall dimensions of the sterilizer feet, with and without rear spacers.



A Feet
B Rear spacers

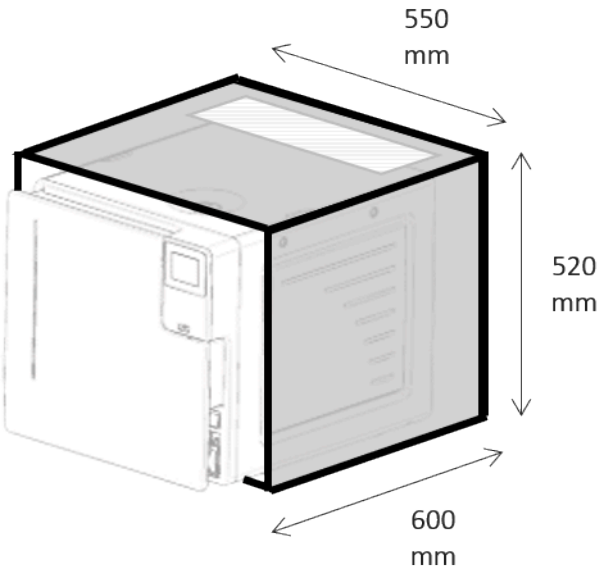
4.2. DIMENSIONS OF THE RECESSED INSTALLATION COMPARTMENT

When installing the sterilizer inside a cabinet, you must provide adequate space all around the device to provide effective ventilation, as well as an opening at the top (385 sq.cm) ensuring an adequate air flow and the consequent optimum cooling of the heat exchanger.

Mount the rear spacers supplied to ensure that the sterilizer is placed at the correct distance from the wall.

The compartment where the sterilizer will be installed must have the following minimum dimensions:

COMPARTMENT DIMENSIONS	CHAMBER VOLUME 17-22-28 L
Height	520 mm WITH FRONT FILLING OR AUTOMATIC FILLING KIT
	WITH TOP FILLING provide for a sliding surface with suitable load bearing capacity (approx. 90kg)
Width	550 mm
Depth	600 mm
Opening	385 sq.cm



In case of water manual filling from the top, the installation compartment must be equipped with an extractable table with suitable load bearing capacity (approx. 90Kg)

Compartment dimensions lower than those shown may compromise the correct circulation of air around the device and may not provide adequate cooling, with the consequent deterioration of performance and/or possible damage.

If the main switch is inaccessible when installed in the compartment, use an electric plug that incorporates an on/off switch.
Do not remove the upper cover nor any other external part. The device must be completely installed in the compartment.
Please refer to appendix "technical characteristics" for complete data specifications.

4.3. GENERAL PRECAUTIONS FOR INSTALLATION

To ensure a correct operation of the device and/or avoid risk situations, respect the following **warnings**:
- Install the sterilizer on a flat and perfectly horizontal surface;
- Make sure that the support surface is strong enough to support the device weight (about 90 kg, complete with water in hydrostatic test configuration) **and has the following minimum dimensions: Width 550 mm, Depth 600 mm**;
- Leave adequate space for ventilation all around the sterilizer, in particular in the rear area;
- If the device is built-in into a cabinet, be sure to respect the warnings in the previous paragraph, avoiding any obstructions of the air intakes;
- Do not install the sterilizer too close to tubs, sinks or similar places, avoiding contact with water or liquids. This could cause short circuits and/or potentially dangerous situations for the operator;
- Do not install the sterilizer in excessively humid or poorly ventilated environments;
- Do not install the machine in environments with flammable and/or explosive gasses or vapours;
- Install the device so that the supply cable is not bended or squeezed.
- The power cable must freely run all the way to the electrical outlet;
- Install the device so that any external filling/drainage pipes are not bent or squeezed.

4.4. POWER SUPPLY

The electrical system to which the sterilizer will be connected must be suitably dimensioned according to the electrical characteristics of the device.
Plate data are shown in the TECHNICAL SPECIFICATIONS table and on the back of the machine.

4.5. ELECTRICAL CONNECTIONS

This information is shown on the back of the machine.
The sterilizer must be connected to a socket of the electric system having adequate capacity for the absorption of the device and properly earthed, in accordance with laws and/or regulations in force.
The socket must be properly protected through magneto-thermal and differential circuit breakers having the following characteristics:
- Rated current I_n: **16 A**
- Residual current I_{Dn}: **0.03 A**

The manufacturer is not responsible for any damage caused by the installation of the sterilizer with unsuited and/or not properly earthed electric systems.

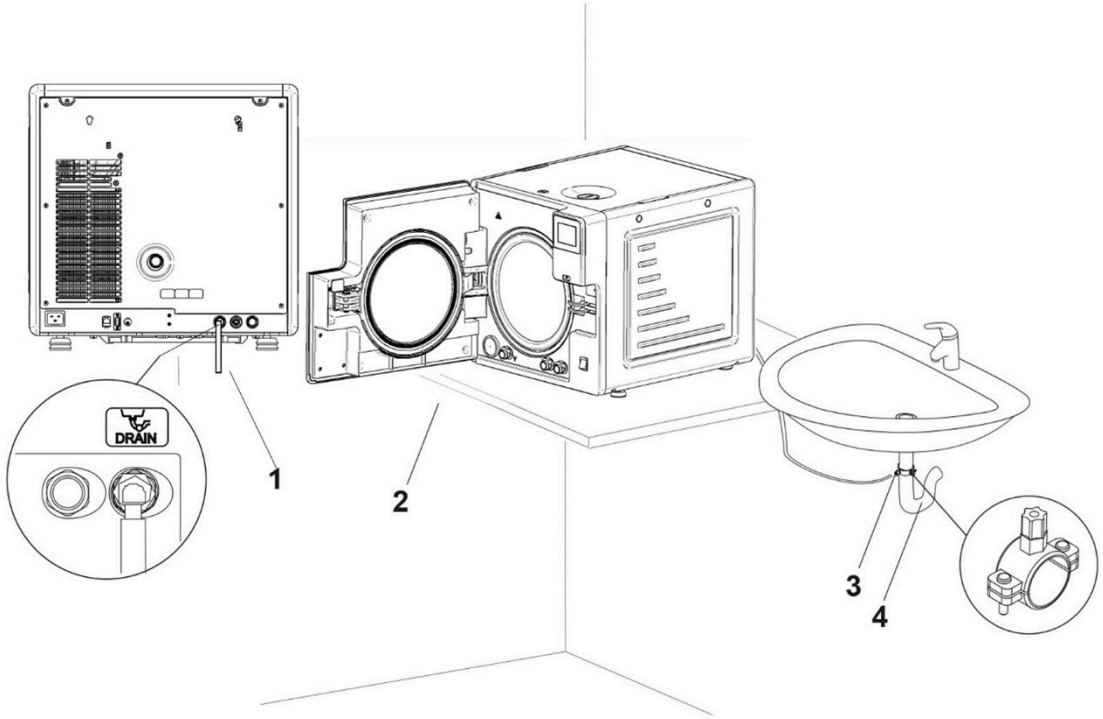
Always connect the power cord directly to the power outlet.
Do not use extensions, adapters or other additional components.

4.6. DIRECT CONNECTION TO CENTRALIZED DRAINING POINT

- Remove the cap holding clip and the cap on the rear of the autoclave;
- Fit the plastic tube on the elbow union (supplied);
- Fit the union and then refit the clip;
- Fasten the clamp (supplied) to the drain siphon;
- Cut the tube to the right length and insert its free end into the centralized draining point union locking it with the dedicated ring nut.

Make sure that the tube is not bent, crushed or obstructed in any way.

The following diagram provides an indicative arrangement of the components:



1 Plastic hose for direct water drainage;
2 Resting surface;
3 Clamp;
4 Drain siphon.

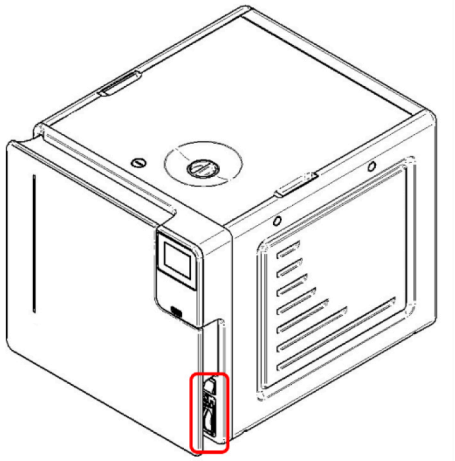
The position of the union of the centralized draining point must be lower than the resting surface of the sterilizer. Otherwise, the tank may not be emptied correctly.

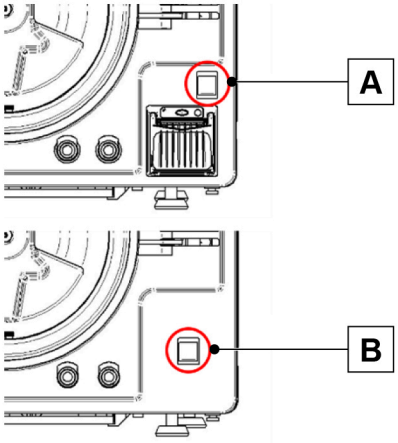
5. FIRST START-UP

The time required to start the sterilizer is approximately 30 seconds.

5.1. POWER ON

Once the sterilizer has been correctly installed, turn it on with the main switch on the front right-hand side of the machine.





A With integrated printer
B Without integrated printer

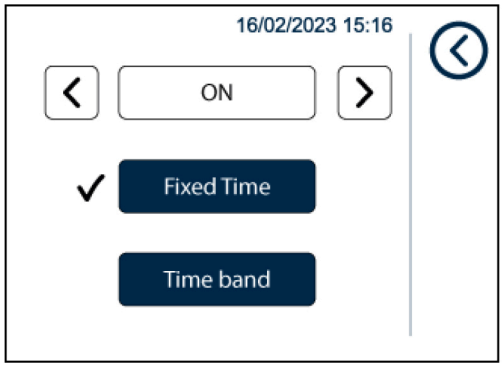
Do not turn on the sterilizer if USB key is inserted.

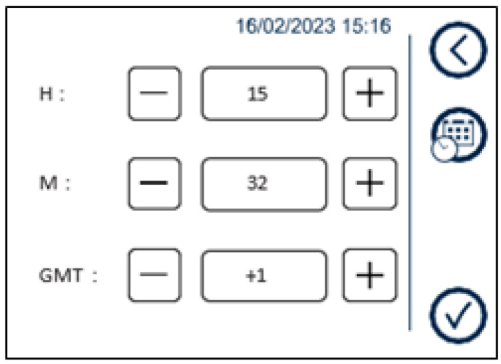
When the device is first turned on, the display shows the selection of LANGUAGE, DATE AND TIME settings.

Confirm your selections with the icon (**A**).

At first start-up, once LANGUAGE, DATE AND TIME have been set, the PREHEATING screen shown below appears.

See section PREHEATING in chapter SETTINGS to set the relevant parameters.

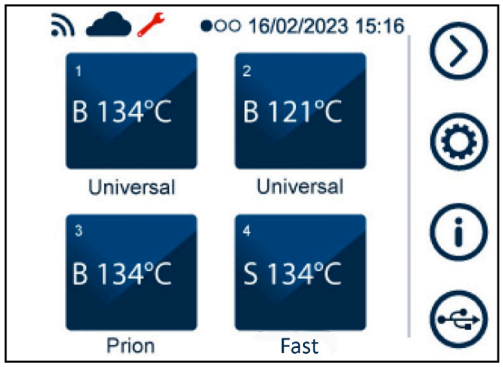




5.2. MAIN MENU

At the end of starting procedure the main menu is displayed on the side.

The sterilizer waits for the program selection.

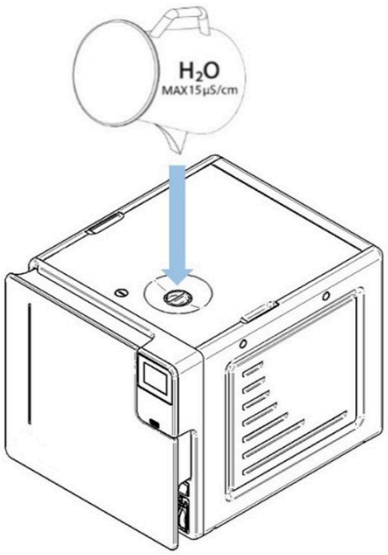


5.3. DISTILLED WATER FILLING

5.3.1. MANUAL FILLING

The first time the sterilizer is used, and later when the lack of water is signalled, you will have to fill, or top-up, the distilled water tank.
Open the filling plug.
Pour water through the funnel until reaching the maximum level inside the tank (MAX). When the (MAX) level is reached, the sterilizer will make a sound indicating that the correct water level has been reached. Then stop filling and close the plug.

Pay attention not to spill water on the machine; in case, promptly dry.



The tank must be filled before the cycle starts or after its completion.
Do not fill/empty tanks during cycle execution in order to prevent water or hot steam leaks.

5.3.2. AUTOMATIC FILLING

Refer to appendix “ADDITIONAL COMPONENTS” and to the Manual of the specific additional component.

If an automatic filling system is connected (for S models, external pump kit and EV AUX kits only), the use of the direct drainage connection is required.
In case of fault or failure, this system allows any excess water produced by the automatic filling system to flow into the centralized draining point, thus preventing flooding.

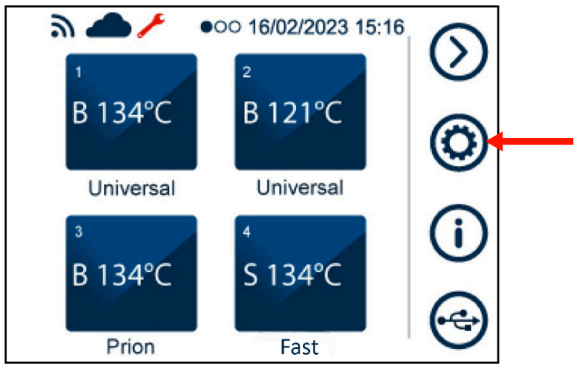
6. CONFIGURATION

The sterilizers offer a wide range of customizable options. The user can thus configure the device according to his/her own needs, adapting the performance based on, for example, the type of activity carried out, the type of material to be sterilized and the frequency of use.
Using the configuration program, the user can set a series of options available in user-friendly menus.

Use the configuration program whenever necessary.
A correct customisation of the device provides the best performance and the most satisfactory use.
The technical service department (see appendix) is available to help users by providing suggestions or advices on the best way to use the options in the configuration program.

6.1. SETTINGS

To enter the configuration program, select the icon shown on the side.
The settings section is spread over three separate pages; you can scroll through the pages using the **>** button located in the right column.



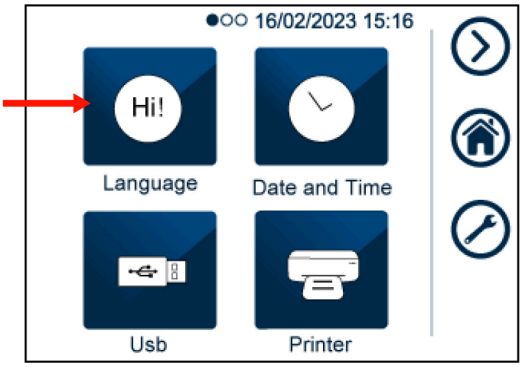
The first page contains the following items:
- LANGUAGE
- DATE AND TIME
- USB
- PRINTERS

The second page contains the following items:
- WI-FI
- ETHERNET
- USERS
- PREHEATING

The third page contains the following items:
- UNITS OF MEASUREMENT
- H_2O FILLING
- REMINDER
- SCREEN

6.1.1. LANGUAGE

Select the LANGUAGE option and confirm by pressing OK.

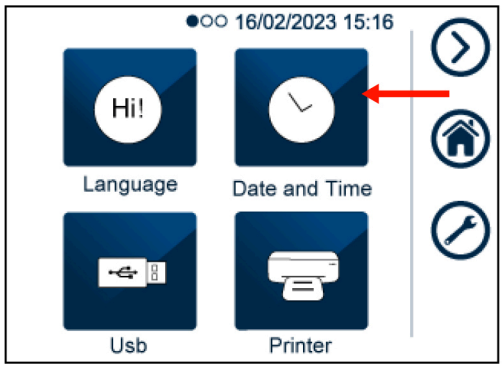


Select the desired language scrolling the list with arrows (∧ and∨) and confirm by pressing (**A**).

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

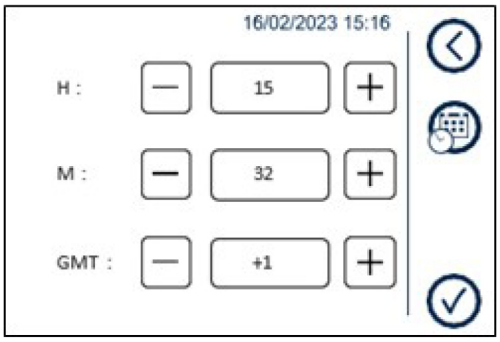
6.1.2. DATE AND TIME

Select the DATE AND TIME option.



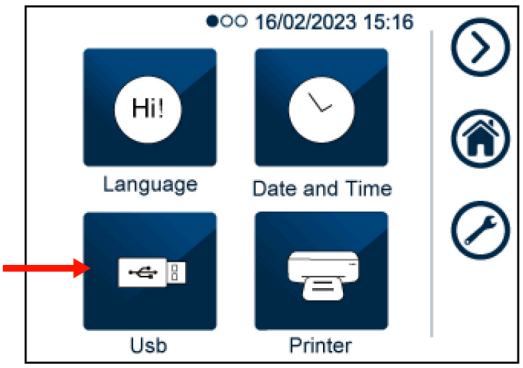
Select day, month and year directly from the calendar that is shown on the display. Confirm by pressing ✓.

Select hour (**h**), minutes (**m**) and time Zone (**GMT**) by pressing the **+** and **-** buttons to adjust the value.
Confirm both screen selections (time/date) with the ✓ icon.
Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



6.1.3. USB

Select the USB option.



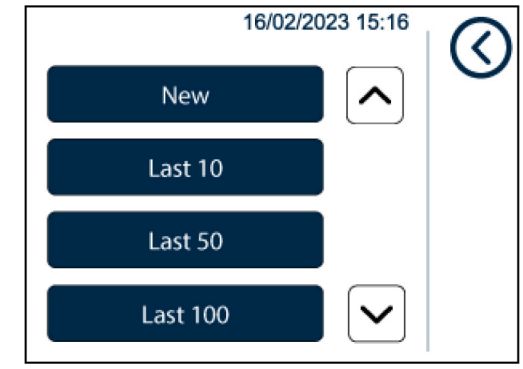
Using the arrows (∧ and ∨) select, among the various options, the subset of cycle reports to download to the USB pendrive.

Within the list there is also a CUSTOM MODE item that allows you to define, by cycle intervals, the cycles for which you want to download the report.

The NEW item allows you to download cycle reports never downloaded before.

Select the icon in the right-hand column to go to the report type selection screen.

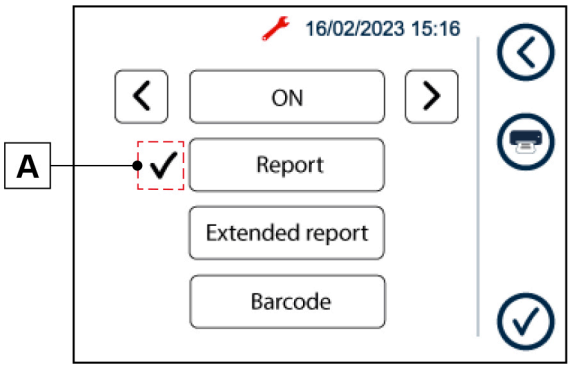
Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



Select the desired report type (the symbol **A** defines the selection made).

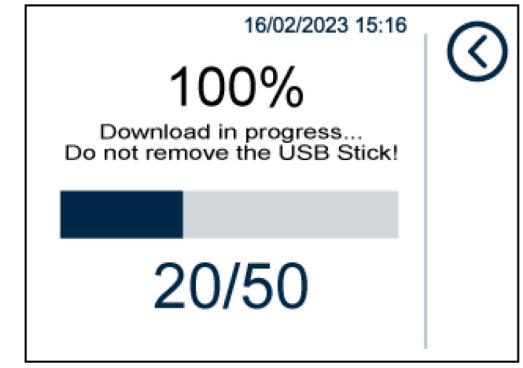
Confirm your selection with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



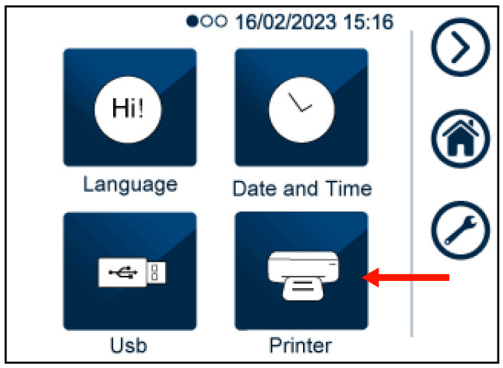
Once you confirm your selections, the download screen will appear with its progress.

Pressing the button corresponding to the EXIT icon returns to the previous menu stopping the download.



6.1.4. PRINTERS

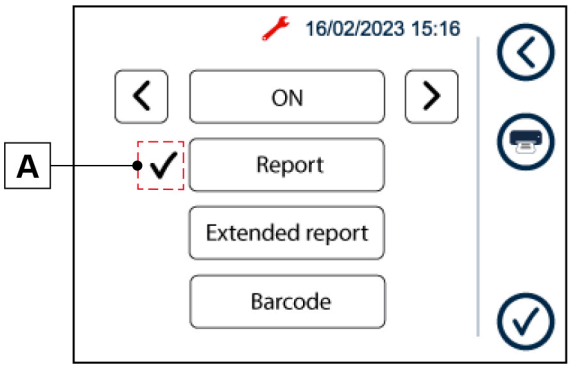
Select the PRINTERS option.



Use the arrows (**<** and **>**) to select whether the printer is to be enabled or not.

Select the desired print format (the symbol **A** defines the selection made).
- Pressing the ✓ icon sets automatic printing at the end of each cycle;
- Pressing the appropriate icon with the printer will print the last cycle performed.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

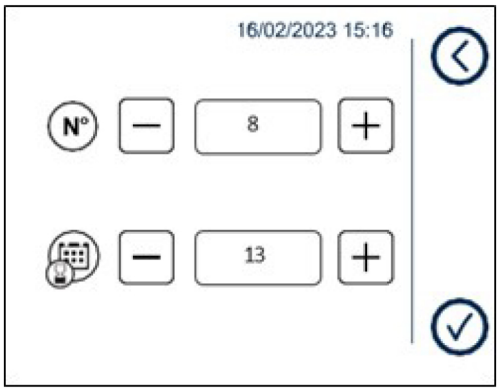


Select the **BARCODE** icon to set such printing mode.
In this configuration, the Labels screen is shown at the end of each cycle and in the label printing phase of the last cycle performed.

Using the **+** and **–** buttons, you can choose:
- The number of labels to be printed;
- The days until the expiry of the sterilized bags.

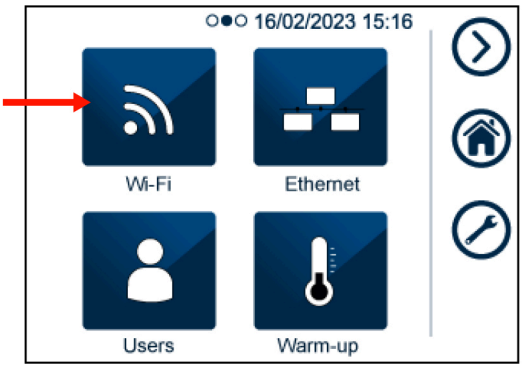
Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



6.1.5. WI-FI

Select the WI-FI option.



Use the arrows (**<** and **>**) to select whether the Wi-Fi is to be enabled or not.

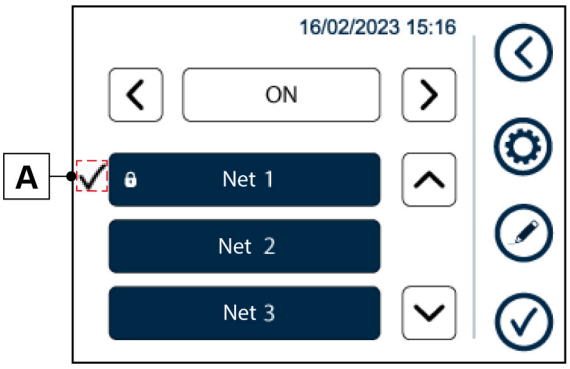
The machine will automatically detect available networks (networks marked with the padlock symbol require a password).

Select the network you want to access.

The symbol (**A**) defines the network to which you are connected.

Confirm your selection with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

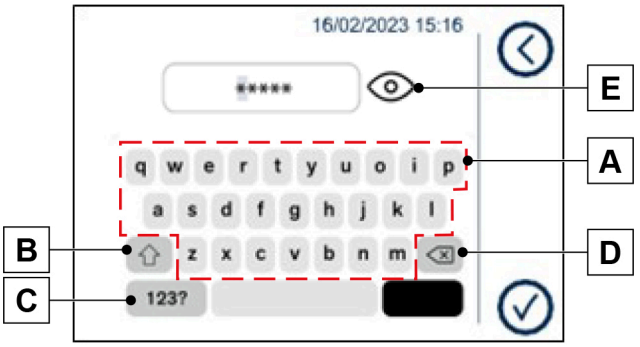


Enter the Wi-Fi password using the keypad on the display:

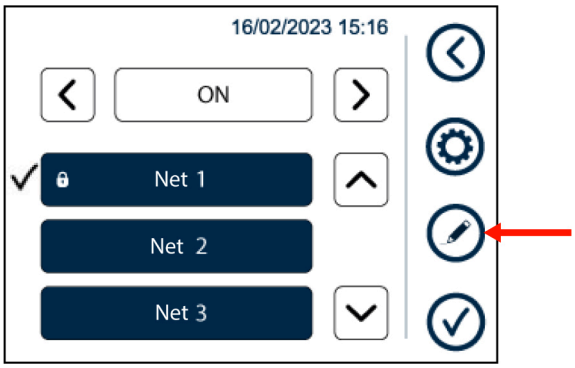
- **A** for alphabetic characters
- **B** for uppercase/lowercase
- **C** for numeric characters and symbols
- **D** to delete the last character
- **E** show/hide password

Confirm the entered password with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



If the desired network does not appear in the list, it can be searched using the appropriate icon on the right.

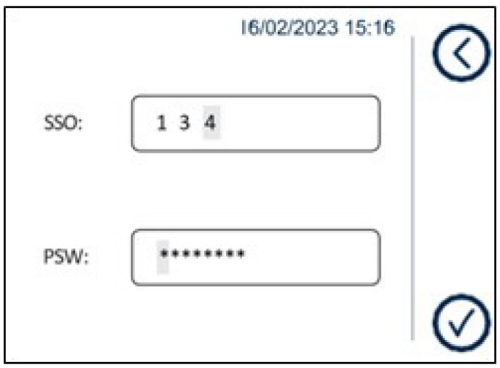


Manually enter the **SSO** and the password (**PSW**) of the network you want to access.

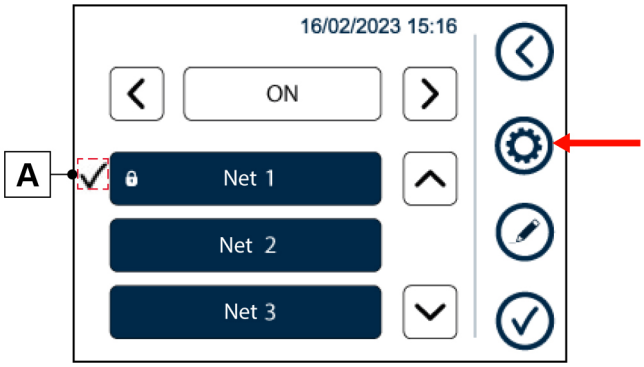
Confirm the entry with the ✓ icon.

The desired network will now appear in the previous screen (network list) with the symbol **A** (connected).

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.

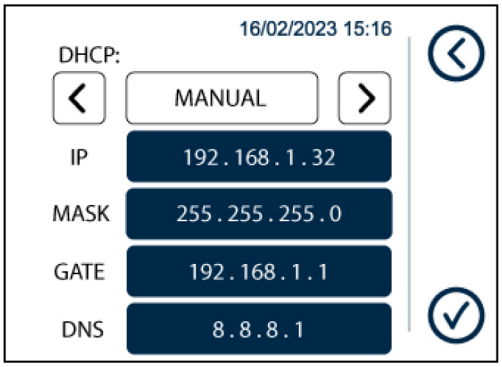


By selecting the gears icon, you can change the parameters of the network to which you are connected.



Use the arrows (**<** and **>**) to select between the manual or automatic management of the DHCP.
In the case of manual DHCP, by pressing the blue values you can change the values of: **IP**, **MASK**, **GATE** and **DNS** (next screen).
Confirm your selections with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



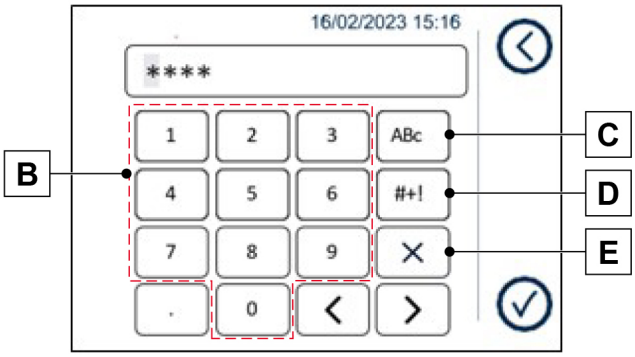
Enter the desired value:

- **B** for numeric characters
- **C** for alphabetic characters
- **D** for special characters
- **E** to delete the last character

< and **>** to confirm a character/move between characters

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



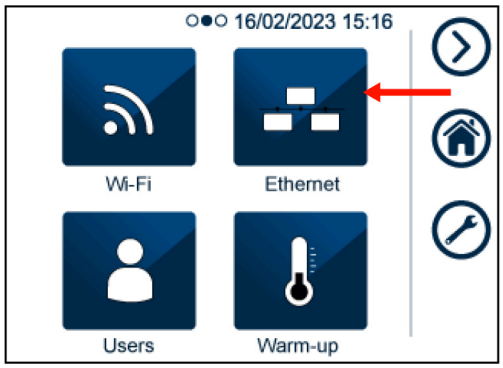
According to DHCP server configuration the numbering received may change at each start.

The TCP-IP number assigned to the sterilizer appears in the Ethernet or Wi-Fi setting screen.

It is usually possible to set DHCP server in order to always assign the same IP number to a given device or to assign the same number to a given device for a predetermined period of time.
For these settings refer to the instruction manuals of your DHCP server or of the local network Internet router.
These settings may require the "MAC address" of the sterilizer, for this information it is necessary to contact the technical service.

6.1.6. ETHERNET

Select the ETHERNET option.

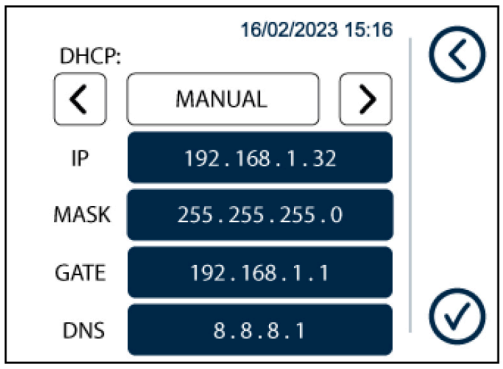


Use the arrows (**<** and **>**) to select between the manual or automatic management of the DHCP.

In the case of manual DHCP, by pressing the blue values you can change the values of: **IP**, **MASK**, **GATE** and **DNS** (next screen).

Confirm your selections with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



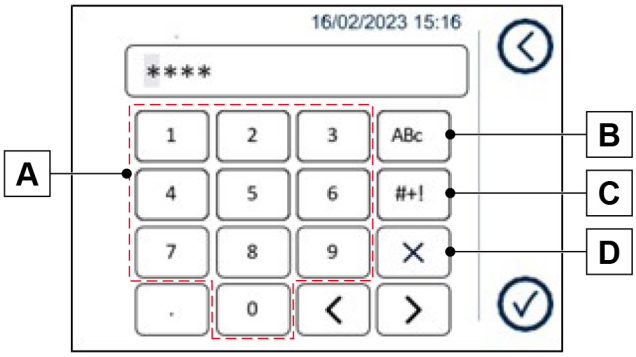
Enter the desired value.

- **A** for numeric characters
- **B** for alphabetic characters
- **C** for special characters
- **D** to delete the last character

< and **>** to confirm a character/move between characters.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



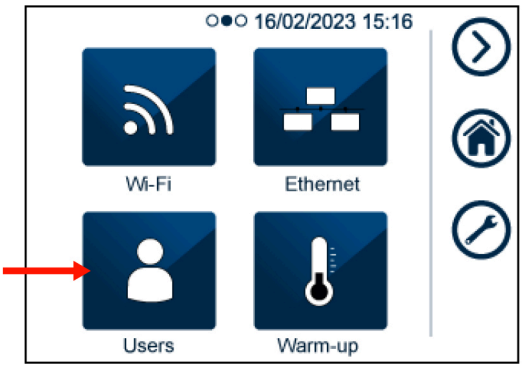
According to DHCP server configuration the numbering received may change at each start.

The TCP-IP number assigned to the sterilizer appears in the Ethernet or Wi-Fi setting screen.

It is usually possible to set DHCP server in order to always assign the same IP number to a given device or to assign the same number to a given device for a predetermined period of time.
For these settings refer to the instruction manuals of your DHCP server or of the local network Internet router.
These settings may require the "MAC address" of the sterilizer, for this information it is necessary to contact the technical service.

6.1.7. USERS

Select the USERS option.



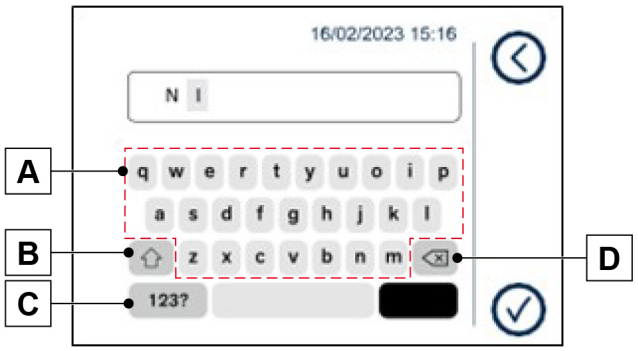
6.1.7.1. CREATING THE FIRST USER

The first selection of the USERS menu requires the entry of a new User who will also acquire administrator credentials.

- **A** for alphabetic characters
- **B** for uppercase/lowercase
- **C** for numeric characters and symbols
- **D** to delete the last character

Confirm the entered user name with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



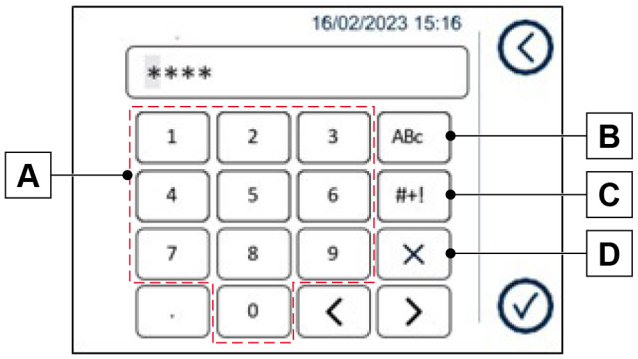
Enter the PIN of the first User (each user has his/her own PIN).

- **A** for numeric characters
- **B** for alphabetic characters
- **C** for special characters
- **D** to delete the last character

< and **>** to confirm a character/move between characters

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.

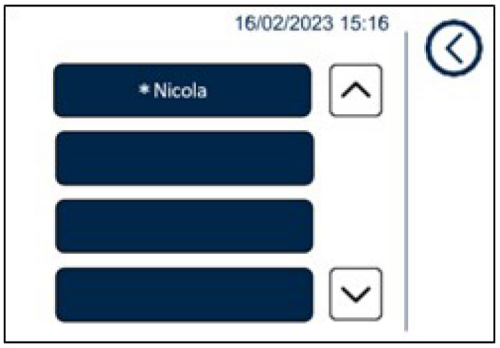


When the first user is created, he/she is shown in the section with the list of registered users.
Administrator users are identified with the * symbol.

This is the main screen of the users menu.

Use the arrows (∧ and ∨) to scroll through the list.

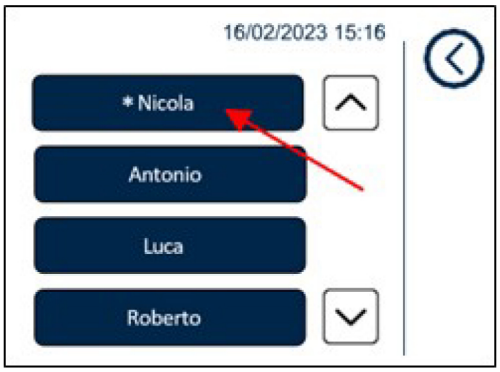
Pressing the button corresponding to the EXIT icon returns to the previous screen.



6.1.7.2. CREATING THE USER (OPERATION AVAILABLE ONLY FOR ADMINISTRATOR USER)

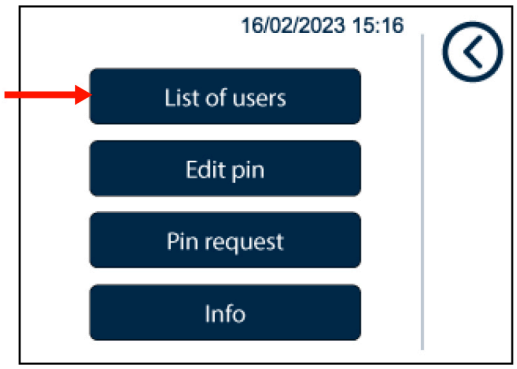
Select the administrator user and enter the relevant PIN.

Pressing the button corresponding to the EXIT icon returns to the previous screen.



Select USERS LIST.

Pressing the button corresponding to the EXIT icon returns to the previous screen.



A screen similar to the main users menu appears, with the difference that there is an icon to the right that allows you to add a new user to the machine.

Select the above icon and, as for the creation of the first user (see paragraph CREATING THE FIRST USER), enter the name and PIN.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

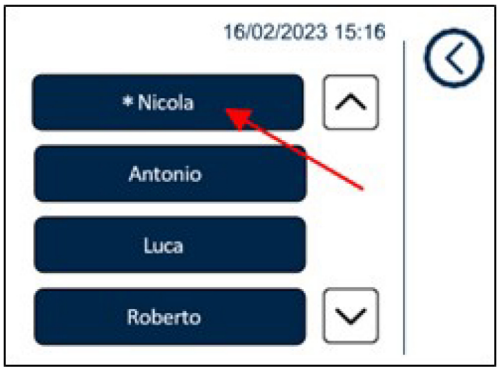
A maximum of 30 users can be entered.

6.1.7.3. USER MANAGEMENT (OPERATION AVAILABLE ONLY FOR ADMINISTRATOR USER)

Select an administrator user and enter the relevant PIN.

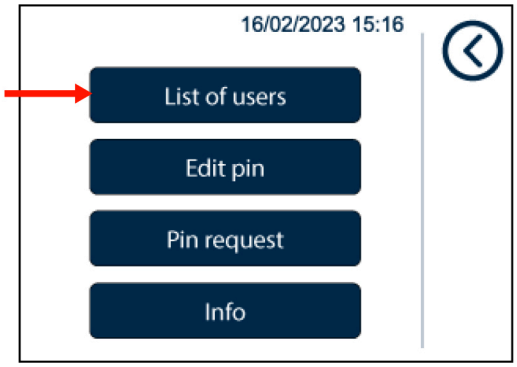
Use the arrows (∧ and ∨) to scroll through the list.

Pressing the button corresponding to the EXIT icon returns to the previous screen.



Select USERS LIST.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

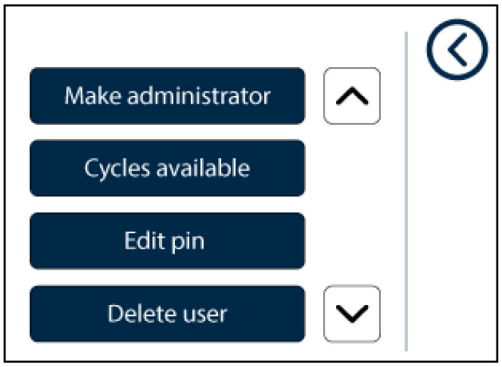


Select the user you want to edit/manage (also administrator).

Use the arrows (∧ and ∨) to scroll through the list.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

Available options are:
- **MAKE ADMINISTRATOR** - allows you to make a user already on the list an Administrator
- **CYCLES AVAILABLE** - allows you to define the cycles that the user can perform
- **CHANGE PIN** - allows you to change the user's PIN
- **DELETE USER** - allows you to delete the user
- **INFO** - allows you to view user's information



Selecting **DELETE USER** displays a pop-up prompting you to confirm your selection.

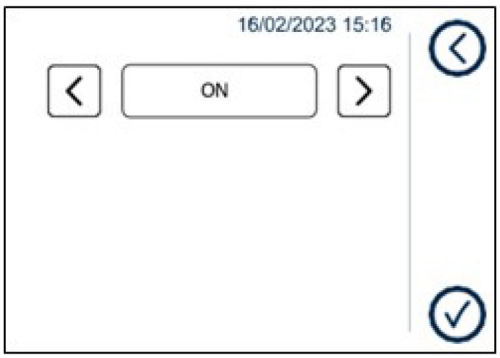
Use the arrows (∧ and ∨) to scroll through the list.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

If you are the only administrator user, you cannot delete yourself/make yourself non-administrator.

In the case of administrator, CHANGE PIN and INFO options are also available in the main screen of administrator user (USERS → ADMINISTRATOR USER SELECTION → CHANGE PIN / INFO)

Selecting **MAKE ADMINISTRATOR** displays the following screen.

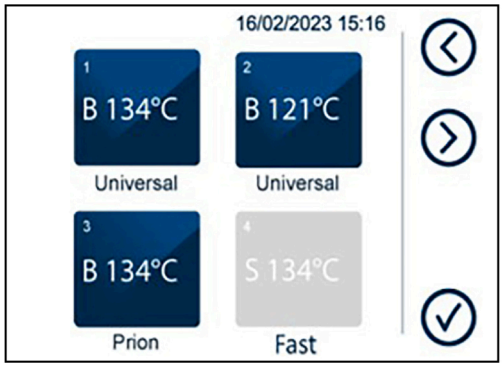


Using the arrows (**<** and **>**), you can define whether the user is an administrator (**ON**) or not (**OFF**).

Confirm your selection with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.

Selecting **CYCLES AVAILABLE** displays the following screen.



Select the cycles that you want to make available to the selected user.

The selected cycles will become coloured.

Use the arrows (**<** and **>**) to scroll through the cycles menu.

Confirm your selections with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.

Selecting **CHANGE PIN** will show the PIN entry screen already seen.

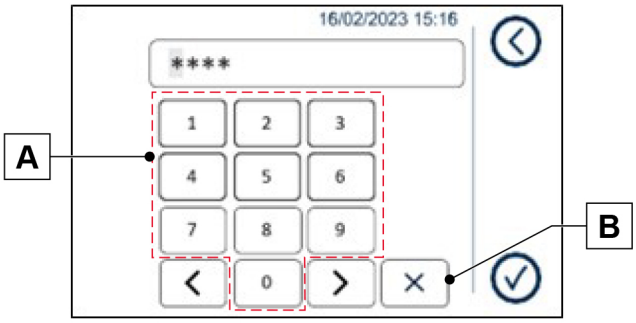
Enter the new PIN.

A for numeric characters
B to delete the last character

< and **>** to confirm a character/move between characters

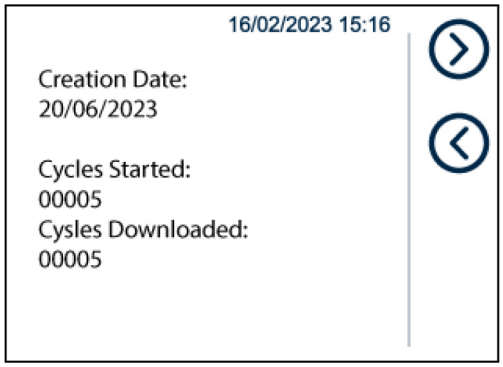
Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



If the user enters an incorrect pin for 3 times, at the following pin entering request it is necessary to enter the specific unlock pin (see APPENDIX – USER PIN RESET) indicated at the end of the manual.
The subsequent user menu access is like the first access.

Selecting **INFO** displays the following screen showing:
- User creation date
- Number of cycles performed by the user



Pressing the button corresponding to the EXIT icon returns to the previous screen.

6.1.7.4. ENABLING THE USER IDENTIFICATION AT THE START AND END OF THE CYCLE (FUNCTION ONLY AVAILABLE TO ADMINISTRATOR USER)

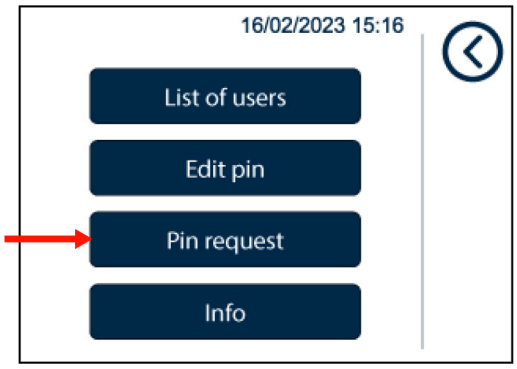
Select an administrator user and enter the relevant PIN.

Use the arrows (∧ and ∨) to scroll through the list.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

Select PIN REQUEST.

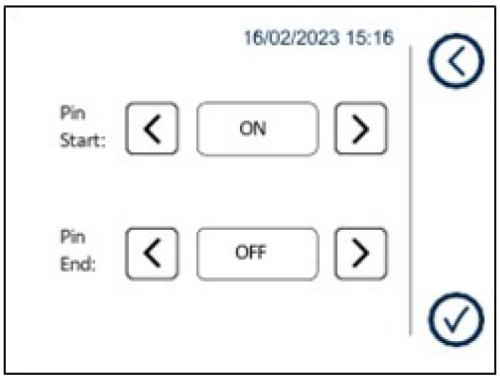
Pressing the button corresponding to the EXIT icon returns to the previous screen.



Using the arrows (**<** and **>**), you can define if the machine has to:
- Request the PIN at the start of each cycle (PIN START)
- Request the PIN at the end of each cycle (PIN END)

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous screen without saving the changes made.



The selection made is valid for all users.

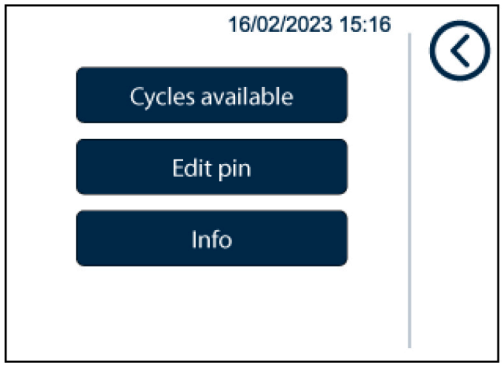
6.1.7.5. USER MANAGEMENT (NON-ADMINISTRATORS)

Select a non-administrator user and enter the relevant PIN.

Use the arrows (∧ and ∨) to scroll through the list.

Pressing the button corresponding to the EXIT icon returns to the previous screen.

From this screen you can:
- View the available cycles by selecting **CYCLES AVAILABLE**
- Change the pin by selecting **CHANGE PIN**
- View the user's information by selecting **INFO**

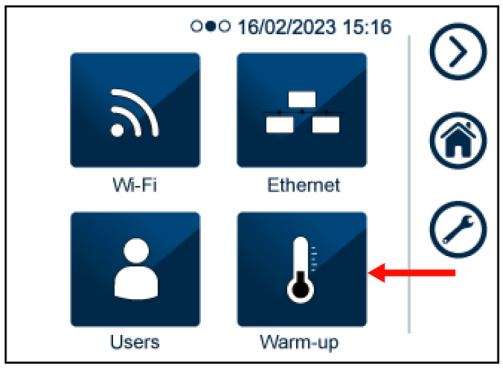


Pressing the button corresponding to the EXIT icon returns to the previous screen.

The cycles available to users can be changed by a profile with Administrator credentials.

6.1.8. PREHEATING

Select the PREHEATING option.

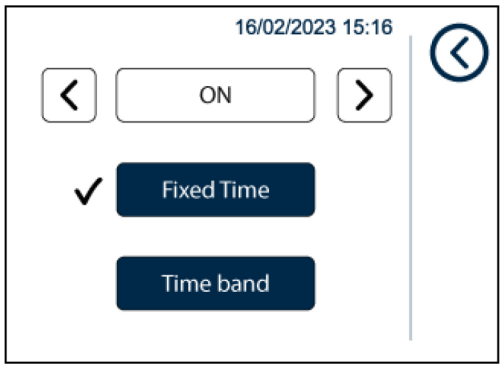


Use the arrows (**<** and **>**) to select whether the preheating is to be enabled or not.

Select the type of preheating between fixed time or time slot.

The symbol ✓ defines the active option.

Pressing the button corresponding to the EXIT icon returns to the previous menu.

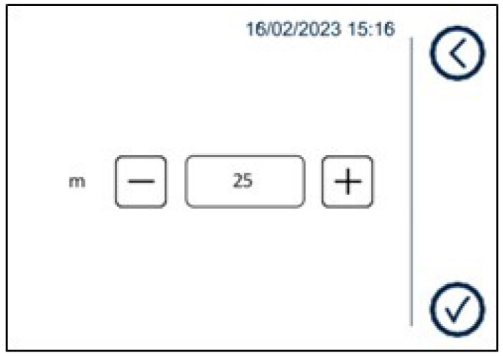


Selecting **FIXED TIME** displays the following screen.

Select the activation time of the preheating in minutes (30 to 120) using the **+** and **-** buttons to adjust the value.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

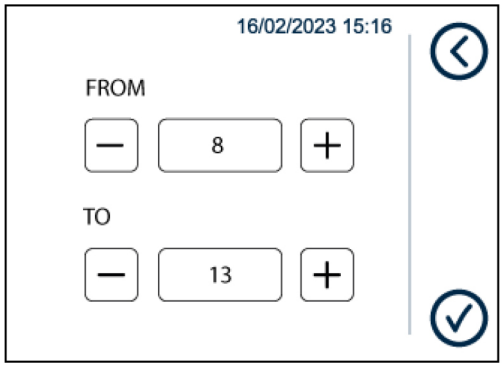


Selecting **TIME** displays the following screen.

Select the time slot in which to activate the preheating using the **+** and **-** buttons to adjust the value.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



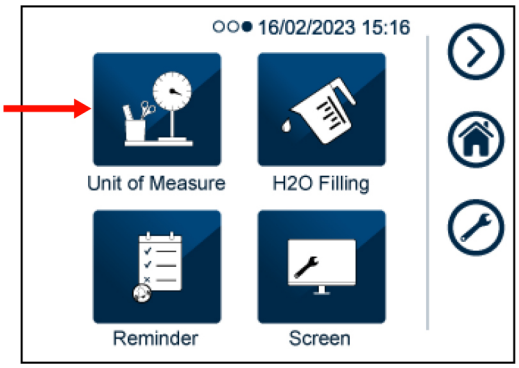
If the FIXED TIME mode is selected, it is recommended to set the activation minutes according to the number of cycles that are planned in one day.
The set time approximately corresponds to the pause between one cycle and the other.
In this way, the device stays warm and heating time is reduced.

If the FIXED TIME mode is selected, the preheating is only activated:
- *after running a Vacuum Test, which has been successfully completed;*
- *after performing a sterilization cycle or Helix/B&D test, which has been completed successfully or unsuccessfully.*

If the TIME mode is selected, the preheating is in any case activated at the set time

6.1.9. UNITS OF MEASUREMENT

Select the UNITS OF MEASUREMENT option.

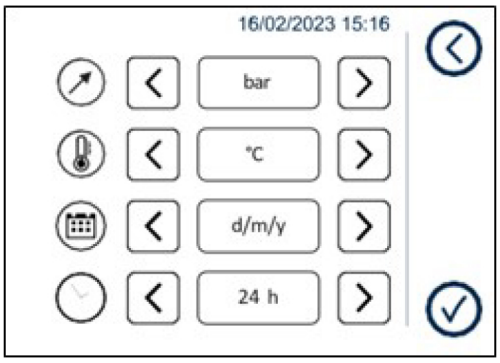


Select the desired units of measurement by pressing the **<** and **>** buttons.

- PRESSURE: bar or kPa
- TEMPERATURE: °C or °F
- DATE: d/m/y or m/d/y
- TIME: 24h or 12h

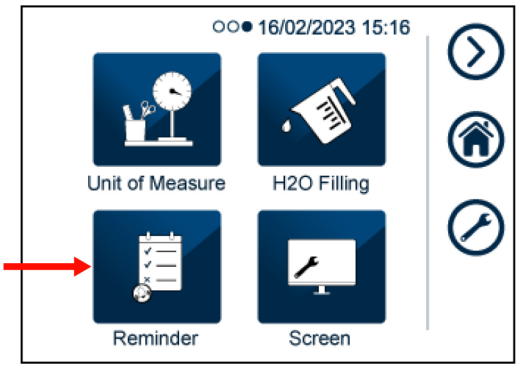
Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



6.1.10. REMINDER

Select the REMINDER option.

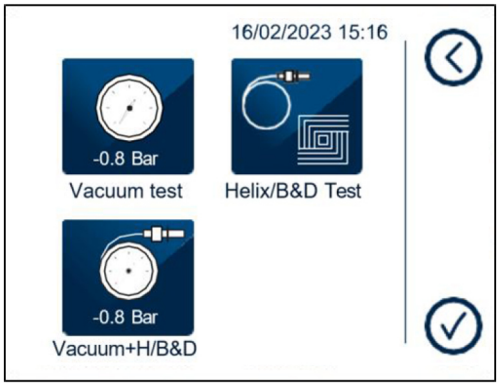


Select the tests for which you want to activate a reminder.

- Vacuum Test
- Helix/B&D Test
- Vacuum + H/B&D

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



Selecting any of the three available cycles displays the following screen.

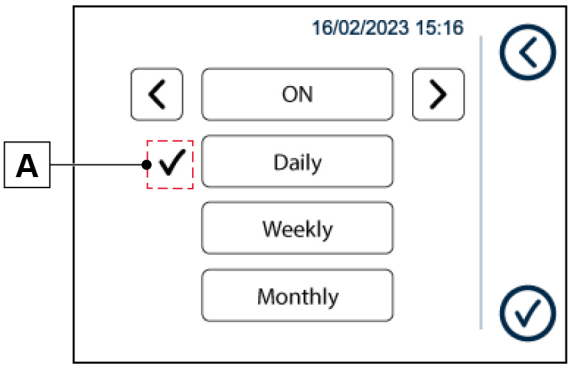
Use the arrows (**<** and **>**) to select whether the reminder is to be enabled or not.

Select the type of reminder between:
- DAILY
- WEEKLY
- MONTHLY

The symbol (**A**) defines the active option.

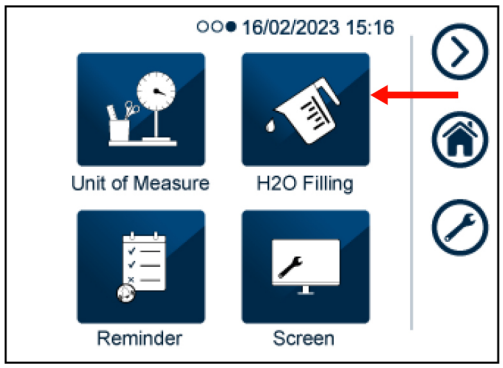
Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



6.1.11. (AUTOMATIC) H2O FILLING

Select the H_2O FILLING option.



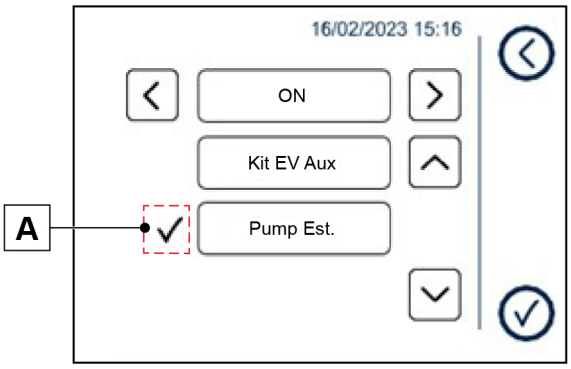
Use the arrows (**<** and **>**) to select whether the automatic water filling is to be enabled or not.

Use the arrows (∧ and ∨) to scroll through the list and select the desired type of automatic filling.

The symbol (**A**) defines the selected type of automatic filling.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



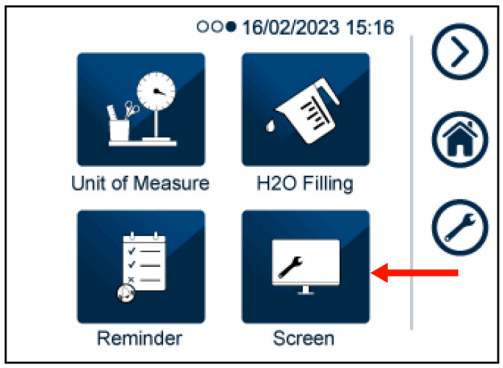
In S models, Pure 100 and Pure 500 are disabled.

When connecting the automatic filling system, the sterilizer asks you to identify the type of device actually connected by pressing the corresponding button.
If connecting the filling system when the sterilizer is off, access the menu via the configuration program and manually select the correct option.

This menu can also be used to temporarily deactivate the automatic filling system (filters exhausted, fault, etc.) and go to manual tank filling, keeping the automatic filling system connected.

6.1.12. SCREEN

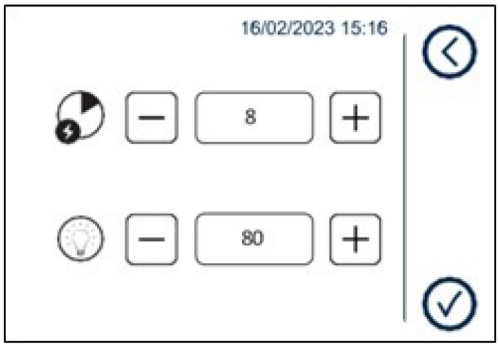
Select the SCREEN option.



Use the **+** and **-** keys to select:
- Screen deactivation (stand-by) time (minutes)
- Display brightness (0% - 100%)

Confirm the entry with the ✓ icon.

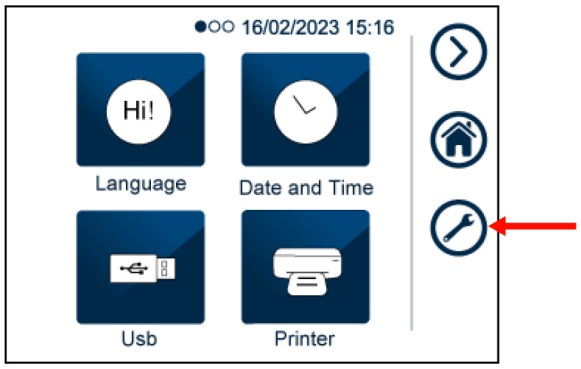
Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.



6.1.13. SERVICE

This menu is intended for the technical service department.

It can be used only by an authorised technician.



7. PREPARING THE MATERIAL

Always use personal protective equipment.

First of all, it should be recalled that, when handling and managing contaminated material, it is a good idea to take the following precautions:
- Wear rubber gloves of suitable thickness and the specific protective mask on your face;
- Clean your gloved hands with a germicide detergent;
- Always carry the instruments on a tray;
- Never carry them in your hands;
- Protect your hands from contact with any sharp points or edges; this will avoid the risk of contracting a dangerous infection;
- Immediately remove any article that does not need to be sterilized or that is not capable of withstanding the process;
- Carefully wash your still gloved hands when done handling non-sterile material;
- All materials and/or instruments to be sterilized must be perfectly clean, without any type of residue (deposits of organic/inorganic material, fragments of paper, cotton/gauze pads, lime, etc.).

In addition to causing problems during sterilization, the failure to clean and remove residue can damage the instruments and/or sterilizer itself.

7.1. TREATING THE MATERIAL BEFORE STERILIZATION

An effective cleaning consists of the following:
1. Separate metal instruments by type of material (carbon steel, stainless steel, brass, aluminium, chromium, etc.), to avoid electrolytic oxidation-reduction.
2. Perform a wash using a thermal disinfector or an ultrasonic device containing a mixture of water and detergent specifically designed for ultrasonic cleaning, carefully following the manufacturer's recommendations.
   For best results, use a detergent specifically designed for ultrasound washing.
3. Manual washing is necessary if no dedicated devices are available or when automatic washing is not permitted due to the technical features of the treated material. This technique exposes the operators in charge to higher risks, for this reason it must only be applied when it is strictly necessary.

Solutions containing phenols or quaternary ammonia compounds can cause corrosion on instruments and on the metal parts of the ultrasound device.

4. After washing, carefully rinse the instruments and make sure that residues have been completely eliminated; if necessary, repeat the washing cycle.
5. Dry all treated instruments. Drying is fundamental because the presence of water traces on the surface can jeopardise the following sterilization process.
   The following items can be used for drying:
   - Paper, non-woven fabric or low-particle wipes;
   - Compressed air to dry hollow instruments.
     The operator must wear suitable PPE and protect the working surface to prevent its contamination by any air-dispersed particles.

To avoid the formation of lime spots, rinse with deionized or distilled water, if possible.
Whenever very hard tap water is used, we recommend always drying the instruments.

For handpieces (turbines, contra angles, etc.), in addition to the procedure described above, perform a cleaning treatment on the special devices ensuring a proper internal cleaning (sometimes including lubrication).

Before performing the sterilization program, remember to lubricate the internal handpiece mechanisms.
By taking this precaution the instrument life time will not be reduced in any way.

Consult the instructions provided by the manufacturer on the instrument/material to be sterilized before subjecting it to autoclave treatment, checking for any incompatibilities.
Strictly follow instructions for use of detergents or disinfectants and instructions for use of automatic devices for washing and/or lubrication.

As regards textile materials (porous), such as lab coats, napkins, caps and other, carefully wash and dry them before treating them in the autoclave.

Do not use detergents with a high content of chlorine and/or phosphates. Do not bleach with chlorine-based products. These substances can damage the tray supports, trays and any metal instruments that may be present in the sterilization chamber.

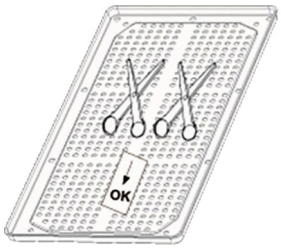
7.2. LOAD ARRANGEMENT

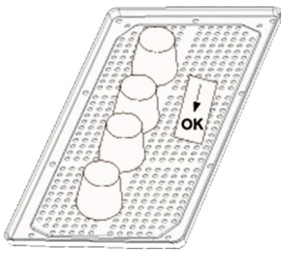
Always use personal protective equipment.

To get the best effectiveness of the sterilization process and preserve the material over time, increasing its useful life, follow the instructions below.

General notes for the positioning on trays:

- Arrange instruments made of different metals (stainless steel, hardened steel, aluminium, etc.) on different trays or anyway on trays well separated from one another.
- In case of instruments not made of stainless steel, put a sterilization paper napkin or a muslin cloth between instrument and tray, avoiding direct contact between the two different materials;
- In any case, arrange the objects sufficiently spaced from each other, so that they can remain in such position for the whole sterilization cycle;
- Make sure that all instruments are sterilized in an open position;
- Position cutting instruments, (scissors, scalpels, etc.) so they can not come into contact with each other during sterilization; if necessary, use a cotton cloth or a gauze to isolate and protect them;
- Arrange recipients (glasses, cups, test tubes, etc.) resting on their side, or upended, thus avoiding pooling water;
- Do not load trays beyond the limit indicated.
- Do not stack trays one on top of the other and do not put them in direct contact with the walls of the sterilization chamber.
- Always use the supplied tray support.
- To insert and remove trays from the sterilization chamber, always use the special supplied extractor.





Place one sterilization chemical indicator per tray to indicate when the process is complete: this will allow avoiding an unnecessary repetition of the process on the same load or, worse, the use of unsterilized material. If packed material is sterilized, place the indicator inside one of the packages.

Note for rubber and plastic hoses:

- Arrange hoses on tray so that their ends are not obstructed or squashed;
- Do not bend or twist hoses, but leave them as linearly stretched as possible.

Notes for packages:

- Arrange packages next to each other, duly spaced and not stacked, avoiding their contact with chamber walls;
- Should it be necessary to wrap special objects, always use a suitable porous material (sterilization paper, muslin napkins, etc.), closing the package with adhesive tape suitable for autoclave.

Notes for packed material:

- Individually pack the instruments or, in case several instruments are placed inside the same bag, make sure they are made of the same metal;
- Seal the case with a thermosealer or adhesive tape for autoclaves;
- Do not use metal staples, needles or the like, as sterility could be affected;
- Lay the bags so as to avoid the creation of air pockets, which could potentially prevent steam correct penetration and removal;
- Position bags in such a way to leave the paper side up and the plastic side down (tray side);
- In any case, check the effectiveness of this position with regard to the effectiveness of drying, reversing it if necessary;
- If possible, using a suitable support, position bags at right angles with tray;
- Never stack bags one on top of the other.

Always pack instruments if they have to be stored for a long time.
Refer also to the indications given in chapter “sterilized material storage”.

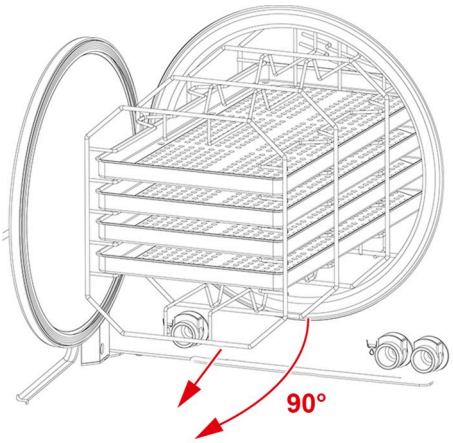
Program selection is an essential operation for the correct performance of the sterilization process.

Since all instruments, or material in general, have a different structure, consistency and properties, the **most suitable program must be identified**, both to preserve the physical characteristics (avoiding or, in any case, limiting its alterations) and to ensure the best effectiveness of the sterilization process. A guide for the selection of the correct program based on the load is present inside **Programs Appendix**.

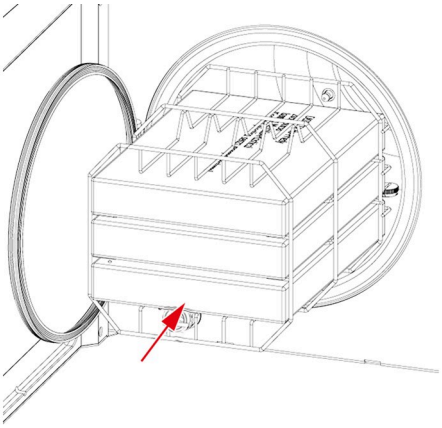
7.3. POSITIONING AND USING THE TRAY HOLDER SUPPORT

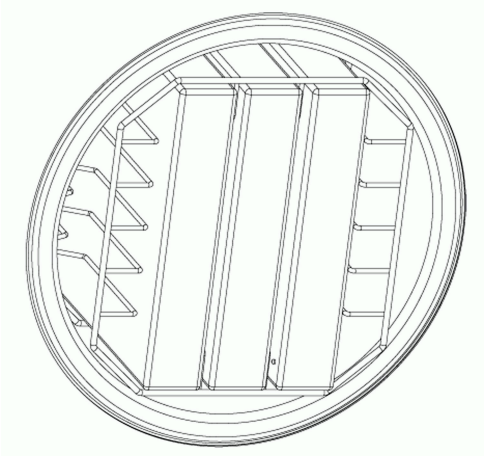
Tray holder support can be used in “tray” version (5/6 compartments based on the sterilizer model).

Or, if tray holder support is extracted and turned by 90°, it can be used to house special “boxes” (3/4 compartments based on sterilizer model).



In any case, it is possible to position the boxes (3 or 4 depending on the sterilizer model) vertically.





8. STERILIZATION CYCLES

A sterilization cycle consists of a determined number of phases.
The number and duration of the phases can differ for the different cycles, based on the type of air extraction, sterilization process and drying methods:

For models , available cycles are:
- **B 134 °C Universal**
- **B 121 °C Universal**
- **B 134 °C Prion**
- **S 134 °C Solid Wrapped**
- **S 134 °C Fast**
- **User-defined**

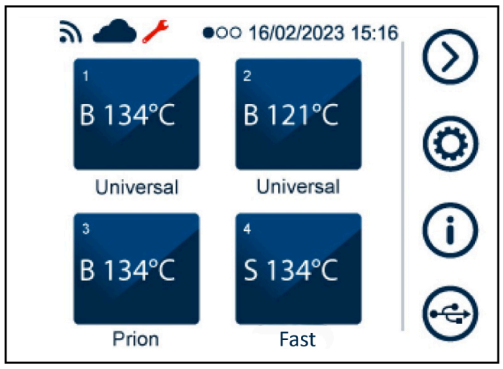
For models CS Classic, available cycles are:
- **S 134 °C Solid (Wrap.) S**
- **S 121 °C Solid (Wrap.) S**
- **S 134 °C Prion**
- **N 134 °C Solid N**
- **N 121 °C Solid N**
- **User-defined**

The electronic control system monitors the various phases, at the same time checking that the various parameters are respected; if any type of anomaly is encountered during the cycle, the program is immediately interrupted, generating an alarm identified by a code, with a relative message explaining the nature of the problem.

With this type of control, when you select a suitable sterilization program, you are guaranteed an effective sterilization under any conditions.

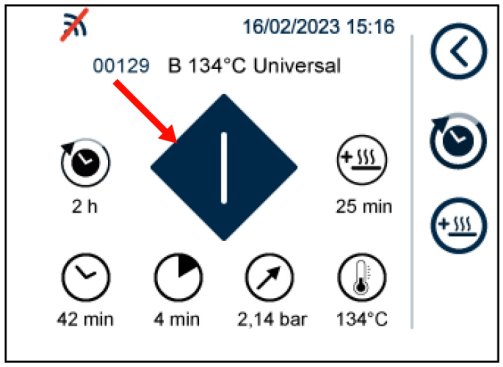
After inserting the load in the sterilization chamber (taking the precautions described in the section “Preparing the material to be sterilized”), select the desired sterilization cycle.

The **>** command is used to access the next Sterilization cycles and TEST selection screen.



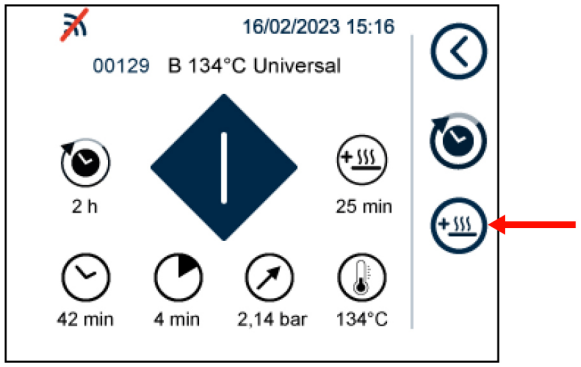
Start the cycle by pressing the indicated START button.
The cycle counter appears in the upper left corner.

The following data are shown at the bottom:
- Total cycle time;
- Process time;
- Rated process pressure
- Process rated temperature



8.1. EXTRA DRYING

Select the EXTRA DRYING option by pressing the indicated button.



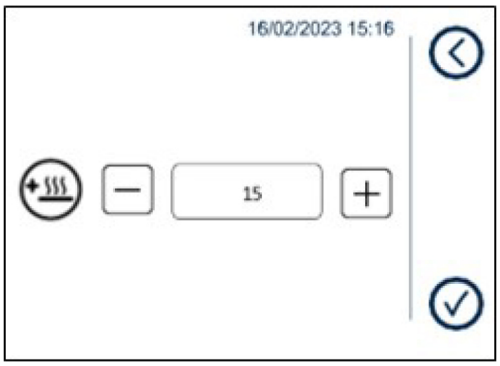
Use **+** and **-** buttons to set the additional drying time (minutes) and confirm.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

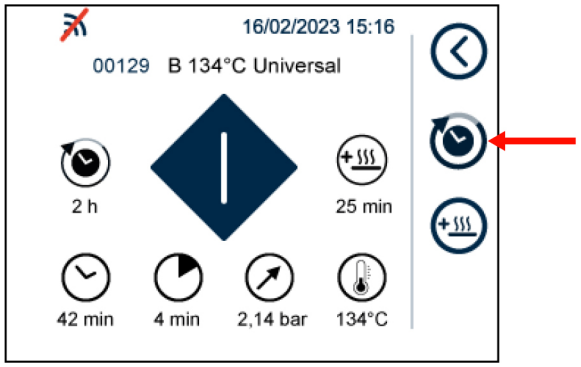
After the confirmation, the extra drying value appears near the total cycle time in the previous screen.

The additional value remains saved.



8.2. DELAY START

Select the DELAY START option by pressing the indicated button.



Use the arrows (**<** and **>**) to select whether the delayed start is to be enabled or not.

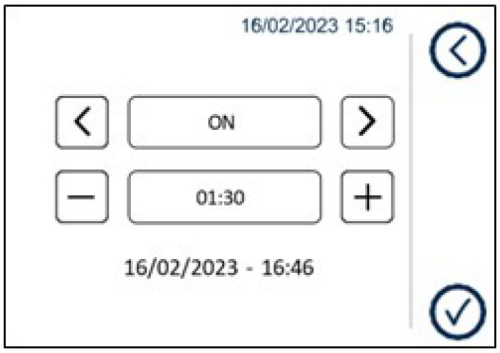
Use **+** and **-** buttons to set the start delay (minutes) and confirm.

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

The cycle start screen and the active delay value will be displayed when confirming.

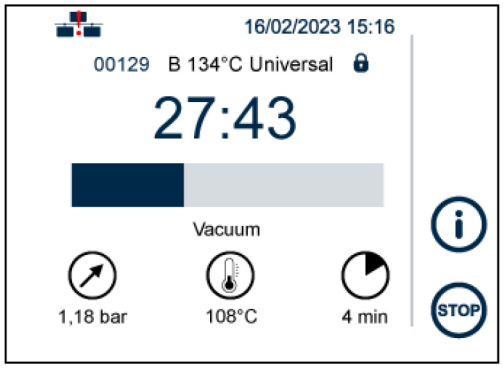
The additional value remains saved.



8.3. EXECUTION OF THE CYCLE

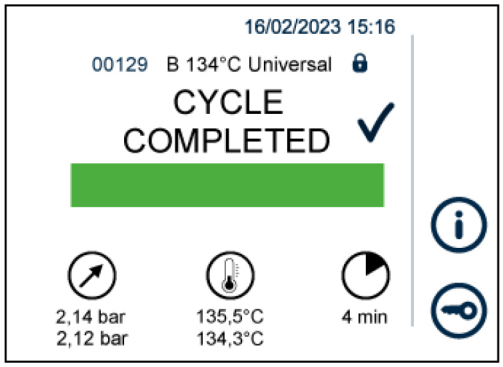
Taking as example the most complete and significant sterilization cycle, i.e. the **B 134 °C Universal** program, characterised by fractionated pre-vacuum, the cycle sequence is as follows:

WARMING UP
FIRST VACUUM PHASE
FIRST PRESSURE RISE
SECOND VACUUM PHASE
SECOND PRESSURE RISE
THIRD VACUUM PHASE
THIRD PRESSURE RISE
STERILIZATION
STEAM DISCHARGE
DRYING
VENTILATION
CYCLE COMPLETION



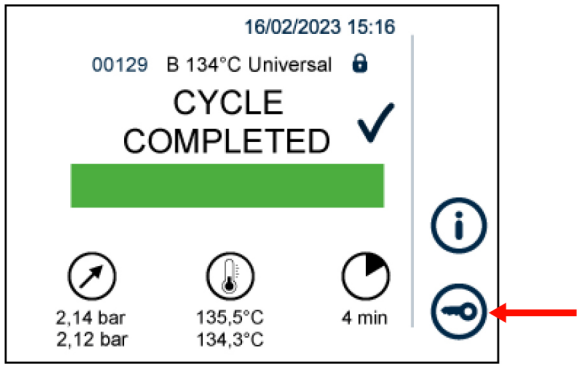
8.4. CYCLE OUTCOME

At the end of the cycle it is important to check the sterilization process outcome.
If the message "**CYCLE COMPLETED**" is displayed, it means that the cycle has been completed correctly without any interruptions for alarms and that **complete asepsis** of the material is guaranteed.

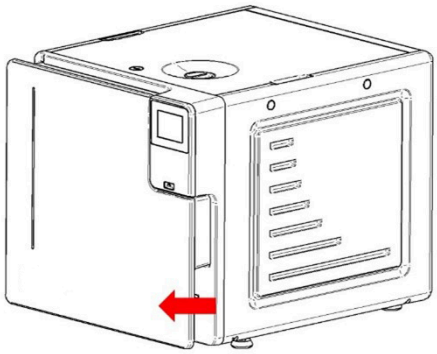


8.5. DOOR OPENING AT CYCLE END

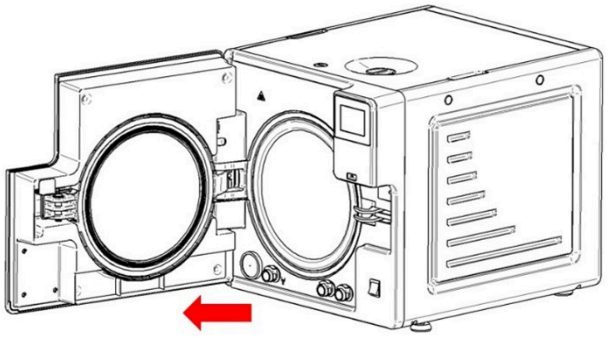
To open the sterilizer door, press the button shown in the figure.



The door unlocks and stays ajar.



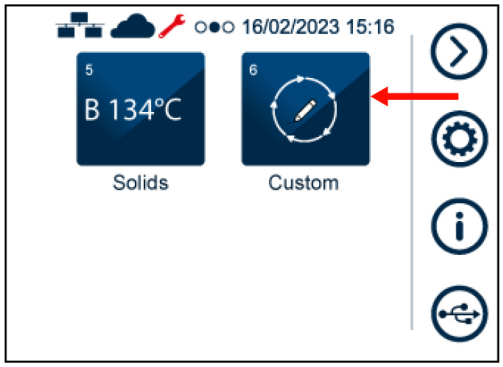
Now you can manually open the door.



8.6. USER-DEFINED CYCLE

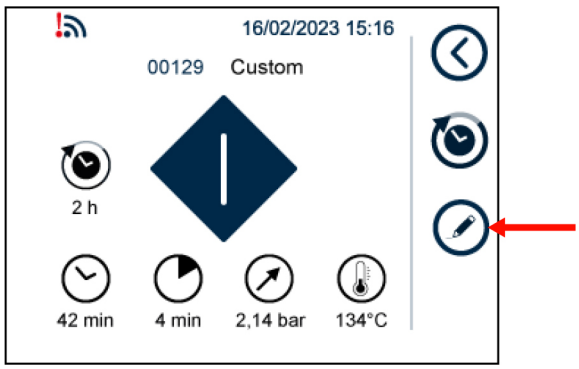
Scroll through the home page with the **>** arrow and select the Custom option.

At first start-up, the default parameters are those of the B 134 °C Universal cycle.



Select the appropriate button to enter the cycle parameters change screen.

The icons show the 4 settable values:
- Vacuum: single or fractionated;
- Temperature: 121°C/134°C;
- Process time: Minimum time expected for the temperature set, it can be increased up to a maximum of 30' (in 1' steps);
- Drying time: Standard drying time for the temperature set, it can be increased up to a maximum of 30'.

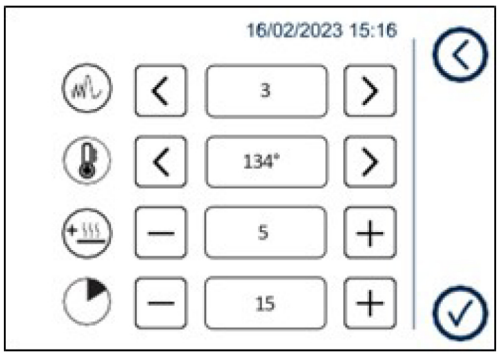


Use the **+** and **-** / **<** and **>** buttons to set the values of the following parameters (from bottom to top):
- Number of pre-sterilization vacuums: single or fractionated
- Sterilization temperature
- Extra drying
- Sterilization time

Confirm the entry with the ✓ icon.

Pressing the button corresponding to the EXIT icon returns to the previous menu without saving the changes made.

To start the cycle press the relevant icon.



9. MATERIAL STORAGE

The sterilized material must be adequately treated and stored to maintain its sterility over time, until its use.
Inadequate storage **can** cause **rapid recontamination**.
This leads to problems regardless of what you do since you will either be using recontaminated material (most of the time unconsciously), placing the user and patient at risk, or you will have to run the sterilization cycle again, with an inevitable waste of time and resources.

For this reason, we think it will be useful to provide several basic suggestions, leaving the operator the task of further study of specific texts.
Assuming that the sterilizer is located in a clean place, free of dust and not too damp, the following precautions should be taken when handling and/or carrying sterile material:

1. Remove the load from the sterilization chamber wearing gloves and a clean, or even better, sterilized smock. As an additional precaution, wear a protective mask on your face;
2. Rest the trays on a dry, suitably clean and disinfected surface. Take care to distance or, at any rate, separate the sterile material from the area where contaminated material is kept waiting to be sterilized;
3. Touch the material and/or instruments as little as possible, taking extreme care not to cut or damage the wrappings.

Let the instruments cool before any transport (and subsequent storage). If necessary for transport, transfer the material using dry, clean and disinfected containers.
The containers must be closed or, if open, covered with clean cloths.

Before use, sterile material must be stored using the appropriate techniques.
These will significantly **slow** recontamination:

1. Store the material and/or instruments in the protective wrappings that were used during sterilization. Do not bag instruments after sterilization.
2. Store the material in a dry, suitably clean and disinfected place, far from the area where infected material passes. If possible, use closed compartments equipped with ultraviolet light;
3. Identify the sterile material by attaching the sterilization date (enclosing a copy of the printed report or an adhesive label);
4. First use the material that has been stored the longest (FIFO, “First In First Out”). This results in material that is homogeneously stored, avoiding storing it for too long, with the consequent risks.
5. Never store material for too long. In fact, do not overlook the fact that materials will tend to degrade and be recontaminated in a finite time, even when the above instructions are followed.


Consult the specifications provided by the manufacturer of the packaging material relative to the maximum allowed storage time.


Such storage times may vary from country to country, according to the local legal requirements.

10. TEST PROGRAMS

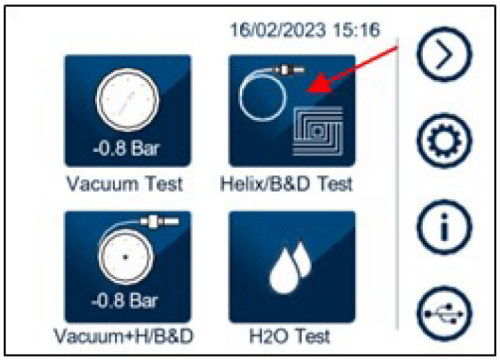
To protect the safety of users and patients, a fundamental process like sterilizing medical devices should be periodically checked.

The device offers the possibility of easily and automatically executing two distinct test cycles:
- **Helix Test/B&D (not provided for S versions);**
- **Vacuum Test (OR VACUUM TEST);**
- A program that executes the two tests combined **Vacuum + B&D (not provided for S versions) is also available;**
- There is also a further test to check the water quality: **H2O Test (not provided for S versions).**

10.1. HELIX TEST/B-D CYCLE

Helix/B&D Test is a cycle run at 134°C characterised by a sterilization phase that lasts a specific time (3.5 minutes); the cycle comprises the fractionated vacuum phases similar to those used in the UNIVERSAL cycles.
Using an appropriate device, you can assess correct steam penetration into hollow loads (Helix Test).
The cycle is also suitable to measure steam penetration into porous loads (Bowie & Dick test pack).

Scroll through the home page with the **>** arrow and select the **Helix/B&D Test** option.



The Helix test device (in accordance with EN 867-5 specifications) consists of a 1.5 m-long PTFE tube, with an inside diameter of 2 mm to whose end a small hermetically-sealed screw cap is fastened, able to contain an appropriate chemical indicator.
The other end of the tube is left free so that the steam can penetrate and you can assess its effectiveness.

To conduct the test (with reference to standard EN 13060), insert the chemical indicator, consisting of a paper strip with a special reagent ink in the device cap (always to be used perfectly dry). Tighten the cap in such a way that seepage through the gasket is not possible.

The device and the chemical indicators to execute the Helix/B&D Test cycle are not provided with the device.
For information in this regard, contact technical service department (see appendix).

Place the device roughly in the middle of the central tray. Do not insert other material in the chamber. Close the door and start the cycle.

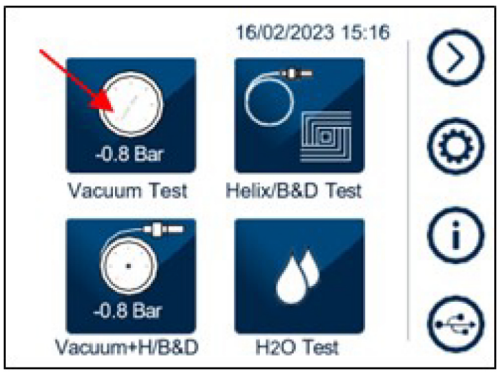
The test cycle takes place with a succession of phases similar to those described for a normal sterilization cycle.
At the end of the cycle, remove the test device from the chamber, open the cap and remove the indicator from its housing.
If the steam has correctly penetrated, the ink will have completely changed its original colour over the entire length of the strip; if not (insufficient penetration), there will only be a partial colour change or even no change at all.

Toning usually occurs from a light colour (beige, yellow, etc.) to a dark colour (blue, violet or black).
In any event, strictly follow the instructions and any additional technical details provided by the indicator manufacturer.

10.2. VACUUM TEST CYCLE

The Vacuum Test cycle allows testing perfect seal of the sterilizer hydraulic system.
Measuring the variation of the degree of vacuum in a defined time-frame and comparing it with pre-established limit values, you can determine how good the seal of the sterilization chamber, tubes and the various interception devices is.

Scroll through the home page with the **>** arrow and select the **Vacuum Test** option.



The cycle must be run with the sterilization chamber empty, and only the trays and their supports inserted.

We suggest to run this test at the beginning of each working day with chamber at ambient temperature.

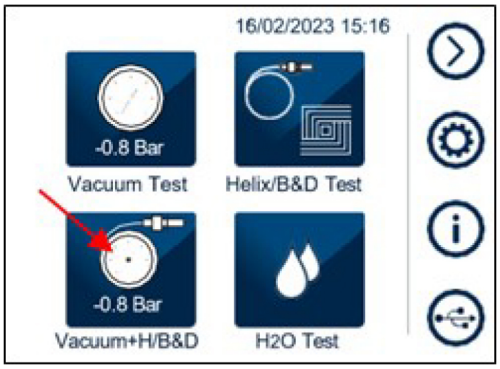
A high chamber temperature affects the variation in the vacuum value measured during the test; the system is therefore programmed to prevent execution of the test when the operating conditions are inadequate.
Close the door and start the program.
The vacuum phase starts immediately and the pressure value (bar) and the countdown from the start of the test cycle are shown on the display.

If the pressure variation exceeds the limit defined, the program is interrupted and an alarm message generated.
For the complete description of the alarms refer to appendix.

10.3. VACUUM + B-D TEST CYCLE

Not provided for S versions.

Scroll through the home page with the **>** arrow and select the Vacuum + H/B&D option.



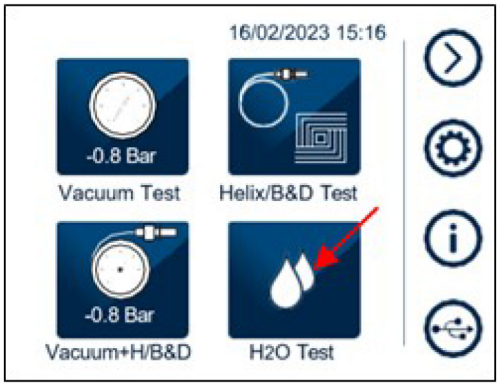
To this end, place the test device on the central tray without inserting other material.
Close the door and start the cycle.
The program will run the two cycles in succession: after successful completion of the Vacuum Test, the Helix/B&D Test will automatically run.
Check the results as described in the previous paragraphs.

The presence of the device does not alter the execution and the result of the vacuum test cycle.

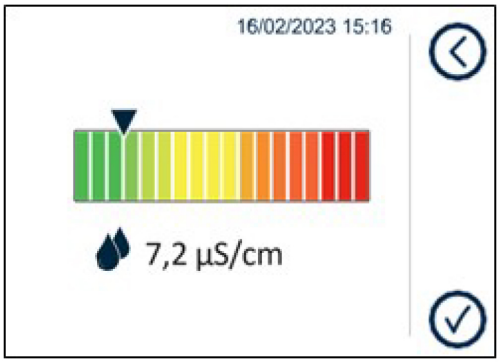
10.4. H2O TEST

Not provided for S versions.

Scroll through the home page with the **>** arrow and select the H2O Test option.



Pressing the button corresponding to the EXIT icon returns to the previous menu.

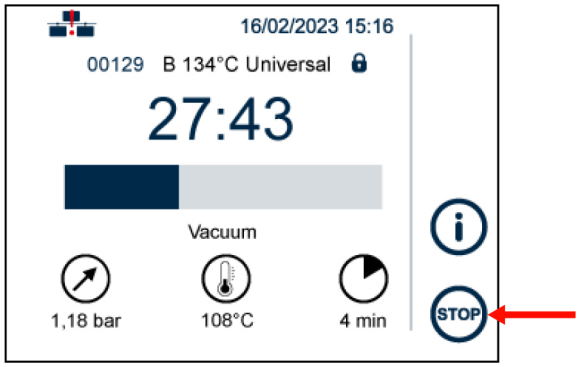


The water conductivity is automatically measured at each sterilization or test cycle start.

10.5. MANUAL INTERRUPTION

The cycle can be manually interrupted by the operator at any moment, by pressing the **STOP** button.

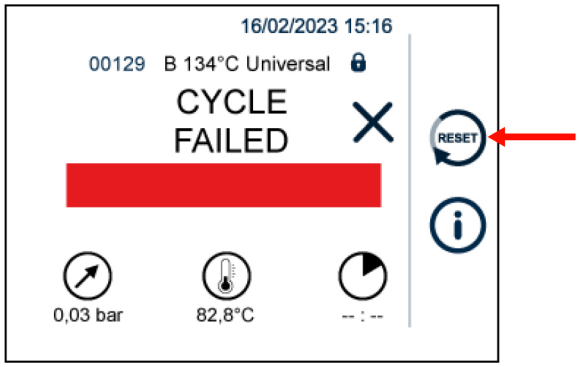
A pop-up asking for confirmation of cycle interruption will be displayed.



The command generates **ERROR E999** since the cycle could not finish correctly.

If the cycle is interrupted during certain phases, an automatic cleaning procedure of the internal hydraulic circuit starts. For the complete description of the alarms refer to "alarms" appendix.

Press and hold **RESET for about three seconds** to open the door.



After a manual interruption of the program, the load must not be used since the sterilization is not ensured.

11. DRAINING THE USED WATER

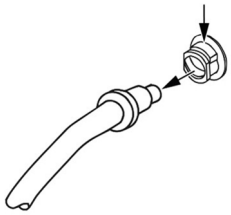
When the water maximum level is reached, a specific message is displayed.

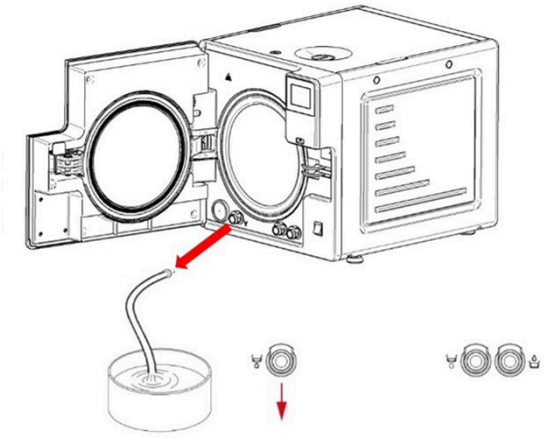
Open the door and continue as follows:

1. Prepare a bowl with a capacity of at least 4 litres in proximity to the sterilizer; place the free end of the drain tube provided in the bowl;
2. Insert the other end of the tube in the female union beneath the chamber inlet (connector on the left) pushing down until you hear a click;
3. Completely empty out the tank and then press on the upper part of the union and detach the tube quick coupling.

Do not open the tank cover during the cycle execution in order to prevent hot water leaks or spurts.

Detaching the tube





12. APPENDIX - PROGRAMS

Water steam sterilization is suitable for almost all the materials and instruments, provided that they can bear without damage a **minimum temperature of 121°C** (if this is not the case, other low-temperature sterilization systems must be used).

The following material can normally be sterilized with water steam:
- Stainless steel surgical/generic instruments;
- Carbon steel surgical/generic instruments;
- Rotating and/or vibrating instruments driven by compressed air (turbines) or mechanical transmission (contra angles, tooth scalers);
- Glass items;
- Mineral-based items;
- Heat-resistant plastic items;
- Heat-resistant rubber items;
- Heat-resistant textiles;
- Medication materials (gauze, pads, etc.);
- Other generic material suitable for autoclave treatment.

Depending on the material conformation (solid, hollow or porous), on any package containing it (paper/plastic bag, paper for sterilization, container, muslin napkins, etc.) and on its resistance to heat, it is essential to choose the suitable sterilization program, referring to the table in the next page.

The device must not be used for the sterilization of fluids, liquids or pharmaceutical products.

"Prion" cycle:
The reference standard for this device, EN13060, does not lay down any requirements for inactivation processes of agents causing spongiform encephalopathies as scrapie, bovine spongiform encephalopathy and Creutzfeldt-Jakob disease.
The cycle named "Prion" (18 min at 134 °C) applies national regulations, which indicate this modified steam sterilization process as part of a prion decontamination program.

12.1. SUMMARY TABLE OF CS Classic 17 220 V – 240 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
S 134 °C Prion	134	2.1	18	S	S	20	54	550	0.9
S 121 °C Solid	121	1.1	20	S	S	20	55	550	0.8
S 134 °C Solid	134	2.1	4(*)	S	S	20	40	300	0.6
N 134 °C Solid	134	2.1	4(*)	N	S	10	30	300	0.5
N 121 °C Solid	121	1.1	4(*)	N	S	10	45	350	0.5
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a
Vacuum Test	-	-0.75	-	-	-	-	23	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
S 134 °C Prion	Solid and hollow instruments “B” in single pack	3.00	1.00	0.25	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
S 121 °C Solid	Solid and hollow instruments “B” in single pack	3.00	1.00	0.25	
S 134 °C Solid	Solid and hollow instruments “B” in single pack	3.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow instruments “B”	6.00	1.20	0.50	
N 134 °C Solid	Unwrapped solid and hollow instruments “B”	6.00	1.20	0.50	
N 121 °C Solid	Unwrapped solid and hollow instruments “B”	6.00	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Vacuum Test	Empty chamber	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.2. SUMMARY TABLE OF CS Classic 22 220 V – 240 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
S 134 °C Prion	134	2.1	18	S	S	14	56	600	0.9
S 121 °C Solid	121	1.1	20	S	S	14	57	600	0.8
S 134 °C Solid	134	2.1	4(*)	S	S	14	42	350	0.6
N 134 °C Solid	134	2.1	4(*)	N	S	7	35	350	0.5
N 121 °C Solid	121	1.1	4(*)	N	S	7	50	350	0.5
XXX °C User (see note)	134-121	2.1-1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Vacuum Test	-	-0.75	-	-	-	-	23	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
S 134 °C Prion	Solid and hollow instruments “B” in single pack	4.00	1.00	0.25	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
S 121 °C Solid	Solid and hollow instruments “B” in single pack	4.00	1.00	0.25	
S 134 °C Solid	Solid and hollow instruments “B” in single pack	4.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow instruments “B”	7.50	1.20	0.50	
N 134 °C Solid	Unwrapped solid and hollow instruments “B”	7.50	1.20	0.50	
N 121 °C Solid	Unwrapped solid and hollow instruments “B”	7.50	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Vacuum Test	Empty chamber	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.3. SUMMARY TABLE OF 17 220 V - 240 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	15	42	550	0.75
134 °C Prion	134	1.1	18	B	F	15	56	600	0.75
121 °C Universal	121	1.1	20	B	F	15	58	600	0.75
134 °C Solid Wrapped	134	2.1	4(*)	S	S	15	34	550	0.65
134 °C Fast	134	2.1	4(*)	S	F	1	22	350	0.55
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	20	-	-
Vacuum Test	-	-0.8	-	-	-	-	18	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	42	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.00	0.30	0.30	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
B 134 °C Prion	Unwrapped porous materials	1.00	0.30	0.30	
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
B 121 °C Universal	Unwrapped porous materials	1.00	0.30	0.30	
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
S 134 °C Fast	Unwrapped hollow instruments	6.00	1.20	0.50	
	Unwrapped solid instruments	6.00	1.20	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	3.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	6.00	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.4. SUMMARY TABLE OF 17 120 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	15	42	550	0.75
134 °C Prion	134	1.1	18	B	F	15	56	600	0.75
121 °C Universal	121	1.1	20	B	F	15	58	600	0.75
134 °C Solid Wrapped	134	2.1	4(*)	S	S	15	34	550	0.65
134 °C Fast	134	2.1	4(*)	S	F	1	22	350	0.55
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	20	-	-
Vacuum Test	-	-0.8	-	-	-	-	18	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	42	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.00	0.30	0.30	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
B 134 °C Prion	Unwrapped porous materials	1.00	0.30	0.30	
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
B 121 °C Universal	Unwrapped porous materials	1.00	0.30	0.30	
	Porous materials in single pack	0.75	0.25	0.25	
	Porous materials in double pack	0.60	0.20	0.20	
	Solid and hollow materials in single pack	3.00	1.00	0.50	
	Unwrapped solid and hollow materials	6.00	1.20	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	1.50	0.50	0.25	
S 134 °C Fast	Unwrapped hollow instruments	6.00	1.20	0.50	
	Unwrapped solid instruments	6.00	1.20	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	3.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	6.00	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.5. SUMMARY TABLE OF 22 220 V- 240 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	17	46	700	0.8
134 °C Prion	134	2.1	18	B	F	17	60	750	0.9
121 °C Universal	121	1.1	20	B	F	17	63	750	0.8
134 °C Solid Wrapped	134	2.1	4(*)	S	S	17	39	750	0.7
134 °C Fast	134	2.1	4(*)	S	F	1	25	400	0.6
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	24	-	-
Vacuum Test	-	-0.8	-	-	-	-	18	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	46	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.20	0.40	0.30	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
B 134 °C Prion	Unwrapped porous materials	1.20	0.40	0.30	
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
B 121 °C Universal	Unwrapped porous materials	1.20	0.40	0.30	
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
S 134 °C Fast	Unwrapped hollow instruments	7.50	1.50	0.50	
	Unwrapped solid instruments	7.50	1.50	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	4.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	7.50	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.6. SUMMARY TABLE OF 22 120 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	17	46	700	0.8
134 °C Prion	134	2.1	18	B	F	17	60	750	0.9
121 °C Universal	121	1.1	20	B	F	17	63	750	0.8
134 °C Solid Wrapped	134	2.1	4(*)	S	S	17	39	750	0.7
134 °C Fast	134	2.1	4(*)	S	F	1	25	400	0.6
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	24	-	-
Vacuum Test	-	-0.8	-	-	-	-	18	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	46	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.20	0.40	0.30	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
B 134 °C Prion	Unwrapped porous materials	1.20	0.40	0.30	
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
B 121 °C Universal	Unwrapped porous materials	1.20	0.40	0.30	
	Porous materials in single pack	1.00	0.30	0.25	
	Porous materials in double pack	0.75	0.25	0.20	
	Solid and hollow materials in single pack	4.00	1.25	0.50	
	Unwrapped solid and hollow materials	7.50	1.20	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	2.00	0.60	0.25	
S 134 °C Fast	Unwrapped hollow instruments	7.50	1.50	0.50	
	Unwrapped solid instruments	7.50	1.50	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	4.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	7.50	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.7. SUMMARY TABLE OF 28 220 V- 240 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	19	56	900	0.8
134 °C Prion	134	2.1	18	B	F	19	70	950	1
121 °C Universal	121	1.1	20	B	F	19	69	950	0.9
134 °C Solid Wrapped	134	2.1	4(*)	S	S	19	45	950	0.8
134 °C Fast	134	2.1	4(*)	S	F	1	28	500	0.7
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	28	-	-
Vacuum Test	-	0.8	-	-	-	-	19	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	51	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.50	0.50	0.50	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
B 134 °C Prion	Unwrapped porous materials	1.50	0.50	0.50	
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
B 121 °C Universal	Unwrapped porous materials	1.50	0.50	0.50	
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
S 134 °C Fast	Unwrapped hollow instruments	9.00	1.50	0.50	
	Unwrapped solid instruments	9.00	1.50	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	5.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	9.00	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

12.8. SUMMARY TABLE OF 28 120 V CYCLES

CYCLE DESCRIPTION	NOMINAL VALUES				BASIC CYCLE PARAMETERS				
	Temp. (°C)	Press. (bar)	Maint. time (min)	Cycle type (EN 13060:2014 + A1:2018)	Pre-vacuum (F=fractionated; S=single)	Standard drying (min)	Total cycle time (max filling)	Max H2O consumption (ml/cycle)	Average energy consumption (kWh/cycle)
134 °C Universal	134	2.1	4(*)	B	F	19	56	900	0.8
134 °C Prion	134	2.1	18	B	F	19	70	950	1
121 °C Universal	121	1.1	20	B	F	19	69	950	0.9
134 °C Solid Wrapped	134	2.1	4(*)	S	S	19	45	950	0.8
134 °C Fast	134	2.1	4(*)	S	F	1	28	500	0.7
XXX °C User (see note)	134 - 121	2.1 - 1.1	4÷30 - 20÷30	n.a.	F/S	5÷30	n.a.	n.a.	n.a.
Helix/B&D Test	134	2.1	3.5	-	F	1	28	-	-
Vacuum Test	-	0.8	-	-	-	-	19	-	-
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	-	-	51	-	-

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
B 134 °C Universal	Unwrapped porous materials	1.50	0.50	0.50	For wrapped materials and instruments (single and double pack), it is advisable to use the 3-tray configuration
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
B 134 °C Prion	Unwrapped porous materials	1.50	0.50	0.50	
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
B 121 °C Universal	Unwrapped porous materials	1.50	0.50	0.50	
	Porous materials in single pack	1.25	0.35	0.35	
	Porous materials in double pack	0.90	0.30	0.30	
	Solid and hollow materials in single pack	5.00	1.50	0.75	
	Unwrapped solid and hollow materials	9.00	1.40	0.25	

CYCLE DESCRIPTION	STERILIZABLE MATERIALS				NOTES
	TYPE	MAX TOTAL MASS (kg)	MAX MASS PER TRAY (kg)	MAX MASS PER ITEM (kg)	
	Solid and hollow instruments in double pack	2.50	0.70	0.25	
S 134 °C Fast	Unwrapped hollow instruments	9.00	1.50	0.50	
	Unwrapped solid instruments	9.00	1.50	0.50	
S 134 °C Solid Wrapped	Solid and hollow instruments “B” in single pack	5.00	1.00	0.25	It is advisable to use the 3-tray configuration
	Unwrapped solid and hollow materials “B”	9.00	1.20	0.50	
XXX °C User (see note)	Unwrapped solid instruments (other load types are possible depending on the user settings)	n.a.	n.a.	n.a.	Variable parameters depending on the settings made
Helix/B&D Test	Test device only (without another load)	-	-	-	
Vacuum Test	Empty chamber	-	-	-	
Vacuum + Helix/B&D Test (can be performed in sequence)	-	-	-	-	

(*) To set a sterilization time of 5.5 minutes, contact the Technical Service.
Single Pre-Vacuum = 1 pre-vacuum; -0.8 bar (see figures in the following pages).
Fractionated Pre-Vacuum = 3 pre-vacuum; -0.8 bar each (see figures in the following pages).
Definition of hollow loads in accordance with standard EN 13060:2014 + A1:2018.
The term “hollow loads” in this manual refers both to “narrow lumen” elements (section 3.18 EN 13060:2014 + A1:2018) and “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).
The term “hollow load B” refers ONLY to “simple hollow” elements (section 3.30 EN 13060:2014 + A1:2018).

PRESSURE, TIME AND TEMPERATURE
According to EN 13060:2014 + A1:2018 for operating cycles

Cycles B at 134°C ()						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.81	-0.79
t2	1PP	---	---	---	+0.67	+0.73
t3	2PV	---	---	---	-0.79	-0.77
t4	2PP	---	---	---	+0.67	+0.73
t5	3PV	---	---	---	-0.79	-0.77
t6	SS	4/ 5.5/ 10	+134	+137	+2.04	+2.40
t7	SE	4/ 5.5/ 10	+134	+137	+2.04	+2.40
t8	DS	---	---	---	-0.76	-0.74
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

Cycles B at 121°C ()						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.81	-0.79
t2	1PP	---	---	---	+0.67	+0.73
t3	2PV	---	---	---	-0.79	-0.77
t4	2PP	---	---	---	+0.67	+0.73
t5	3PV	---	---	---	-0.79	-0.77
t6	SS	20	+121	+124	+1.05	+1.31
t7	SE	20	+121	+124	+1.05	+1.31
t8	DS	---	---	---	-0.76	-0.74
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

Cycle S 134 °C Fast ()						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.74	-0.76
t2	1PP	---	---	---	+0.25	+0.30
t3	2PV	---	---	---	-0.79	-0.77
t4	2PP	---	---	---	+0.25	+0.30
t5	3PV	---	---	---	-0.79	-0.77
t6	SS	4/ 5.5/ 10	+134	+137	+2.04	+2.40
t7	SE	4/ 5.5/ 10	+134	+137	+2.04	+2.40
t8	DS	---	---	---	-0.76	-0.74
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

Cycle S 134 °C Solid ()						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.81	-0.72
t2	1PP	---	---	---	---	---
t3	2PV	---	---	---	---	---
t4	2PP	---	---	---	---	---
t5	3PV	---	---	---	---	---
t6	SS	4	+134	+137	+2.05	+2.31
t7	SE	4	+134	+137	+2.05	+2.31
t8	DS	---	---	---	-0.68	-0.62
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

Cycle S 134 °C Solid (CS Classic)						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.74	-0.76
t2	1PP	---	---	---	---	---
t3	2PV	---	---	---	---	---
t4	2PP	---	---	---	---	---
t5	3PV	---	---	---	---	---
t6	SS	4	+134	+137	+2.05	+2.31
t7	SE	4	+134	+137	+2.05	+2.31
t8	DS	---	---	---	-0.68	-0.62
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

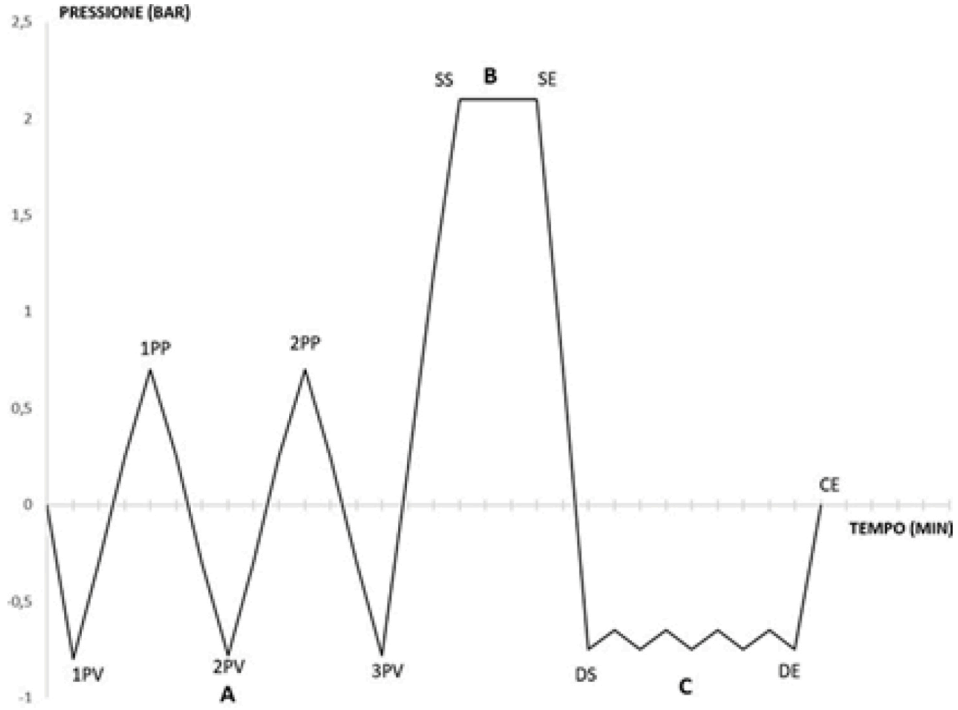
Cycle S 121 °C Solid (CS Classic)						
EN 13060:2014 + A1:2018		**Time (minutes)**	**Min temperature**	**Max temperature**	**Min pressure (bar)**	**Max pressure (bar)**
1	CS	---	---	---	---	---
t1	1PV	---	---	---	-0.81	-0.72
t2	1PP	---	---	---	---	---
t3	2PV	---	---	---	---	---
t4	2PP	---	---	---	---	---
t6	SS	20	+121	+124	+1.05	+1.31
t7	SE	20	+121	+124	+1.05	+1.31
t8	DS	---	---	---	-0.68	-0.62
t9	DE	---	---	---	---	---
2	CE	---	---	---	-0.02	+0.02

12.9. STERILIZATION PROGRAM DIAGRAM

PROGRAM
B 134 °C Universal
134°C – 4’ 00’’

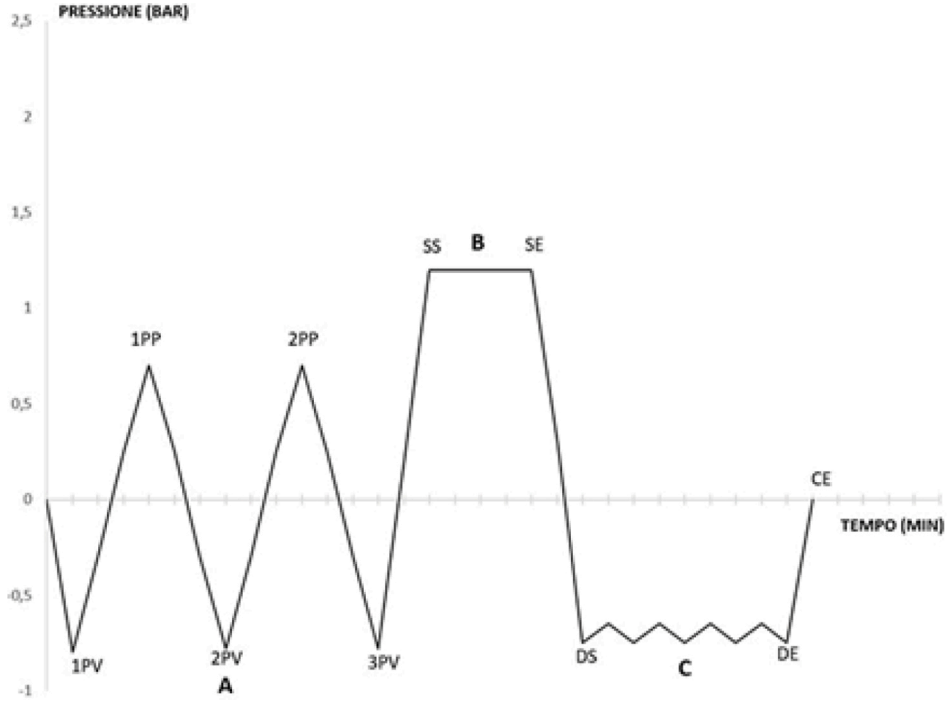
A FRACTIONATED PRE-VACUUM
B PROCESS
C VACUUM DRYING

PROGRAM
B 134 °C Prion
134°C – 18’ 00’’



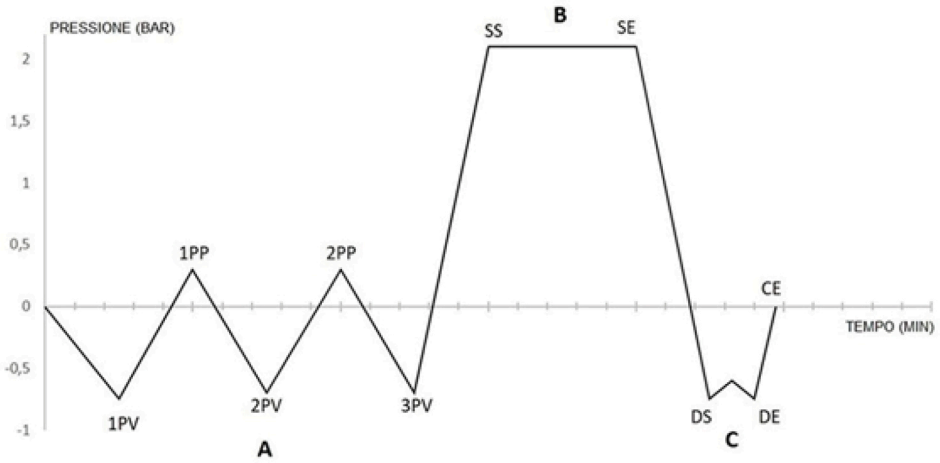
PROGRAM
B 121 °C Universal
121°C – 20’ 00’’

A FRACTIONATED PRE-VACUUM
B PROCESS
C VACUUM DRYING



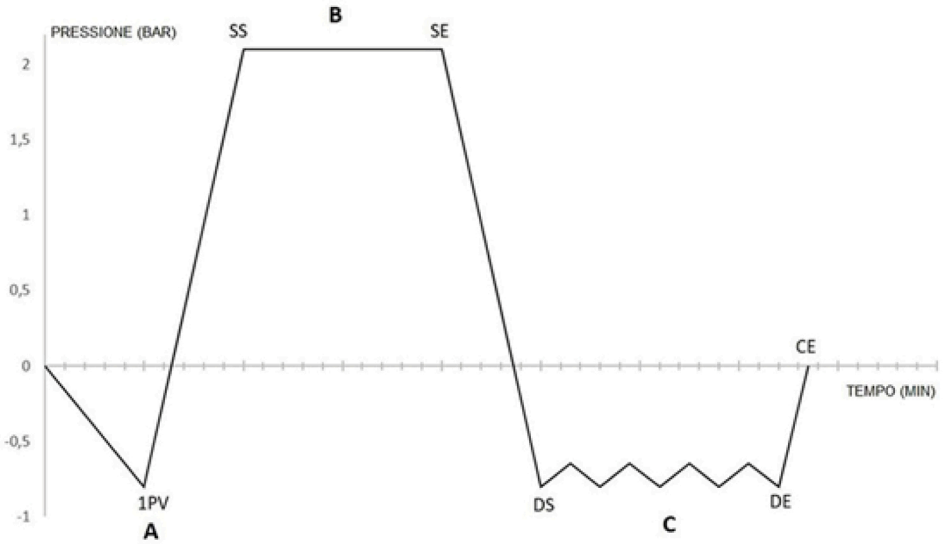
PROGRAM
S 134 °C Fast
134°C – 4’00’’

A FRACTIONATED PRE-VACUUM
B PROCESS
C VACUUM DRYING



PROGRAM
S 134 °C Solid Wrapped
134°C – 4’00’’

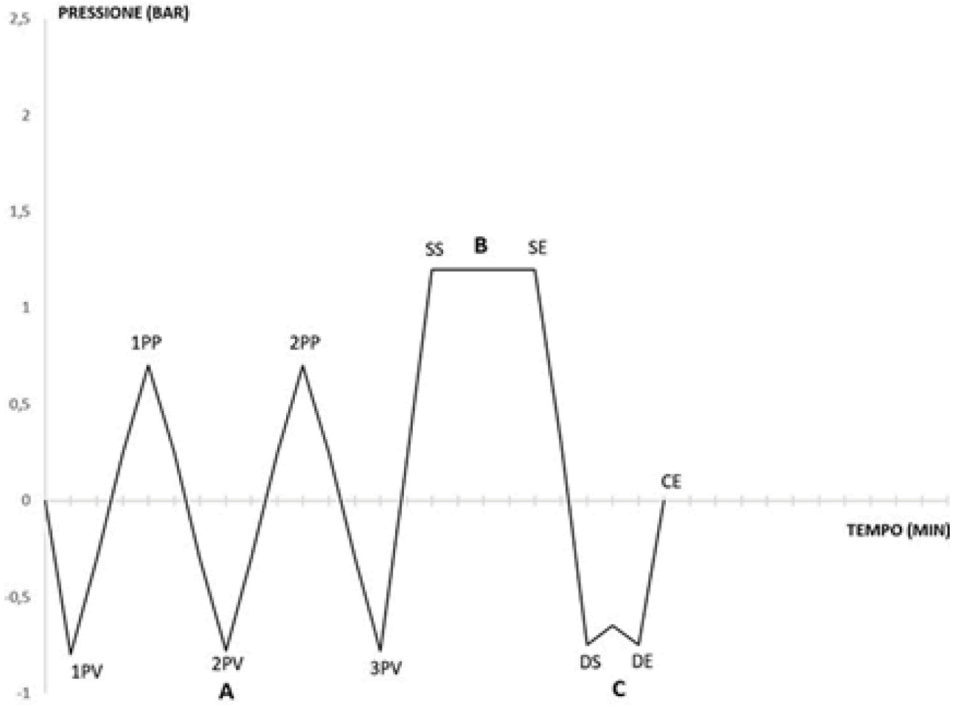
A SINGLE PRE-VACUUM
B PROCESS
C VACUUM DRYING



12.10. TEST PROGRAM DIAGRAM

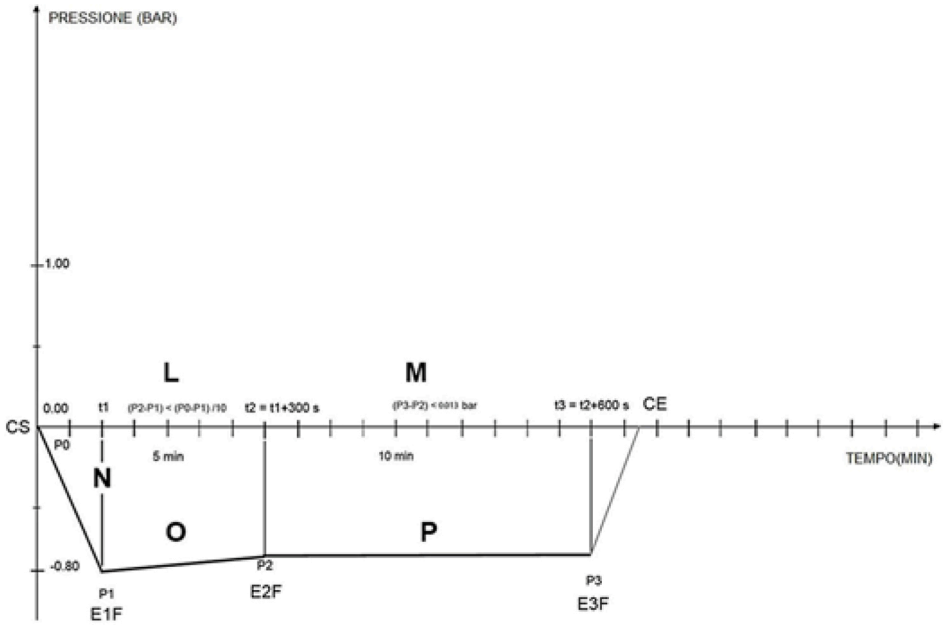
PROGRAM
Helix/B&D Test
134°C – 3'30''

A FRACTIONATED PRE-VACUUM
B PROCESS
C VACUUM DRYING



PROGRAM
Vacuum Test
-0.80 bar

L INTERMEDIATE CONDITION TO CONTINUE THE TEST
M FINAL CONDITION TO PASS THE TEST
N VACUUM PHASE
O STANDBY
P LOSS MEASUREMENT



13. APPENDIX - MAINTENANCE

In addition to correct use, the user needs to perform ordinary maintenance in order to guarantee safe, efficient operation over the device's entire life.

Always use personal protective equipment.

For better quality of maintenance, supplement routine checks with regular periodic check-ups that can be performed by Technical Service Department (*see Appendix*).

It is also fundamental to perform a **periodic sterilizer validation**, i.e. a check of process thermo-dynamic parameters and their comparison with the reference values detected by duly calibrated tools. Refer to 'Sterilizer periodic validation' in the next part of the Appendix.

The ordinary maintenance described below consists in easy manual operations and preventive interventions involving simple instruments.

In the event of replacement of components or parts of the device, request and/or use original spare parts only.

13.1. ORDINARY MAINTENANCE PROGRAM

The table summarizes the maintenance interventions required to maintain the sterilizer in good working order.

In case of **heavy use** we recommend to **shorten** maintenance intervals:

DAILY	Clean the gasket and the internal part of the door Clean external surfaces
WEEKLY	Clean the sterilization chamber and its additional components Disinfect external surfaces Clean/disinfect filling/drainage tanks
PERIODICALLY	See *Scheduled Maintenance Messages*
EVERY 3 YEARS / 3000 CYCLES	General service (see *Description of maintenance interventions*)

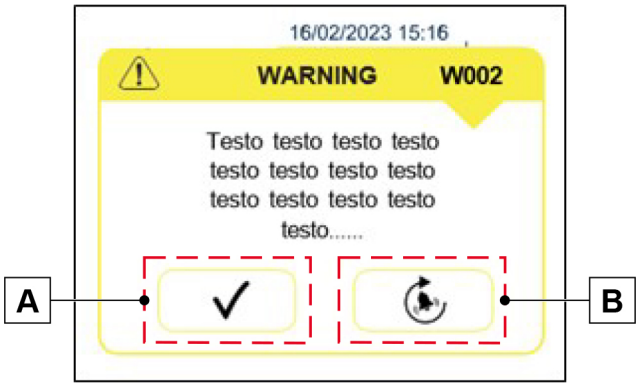
13.2. SCHEDULED MAINTENANCE MESSAGES

The sterilizer periodically displays warning messages relevant to “routine” maintenance operations that must be carried out in order to ensure the proper operation of the device.

Press (**A**) to confirm that the required maintenance operation has been completed.

Press (**B**) to postpone the operation.

In this case, the warning message will reappear the next time the sterilizer is used.



Warnings are shown to the user with the following frequency, which can be set on a cycle basis or on a day basis*:

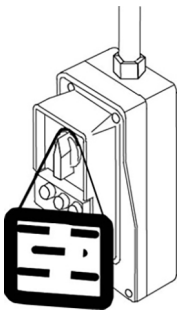
WARNING MESSAGE
BOILER FILTER CLEANING – 250 cycles or 120 days
DOOR LOCK LUBRICATION – 1,000 cycles or 365 days
DUST FILTER CLEANING – 500 cycles or 180 days
BACTERIOLOGICAL FILTER REPLACEMENT – 500 cycles or 180 days
BOILER GASKET REPLACEMENT – 1,000 cycles or 365 days
GENERAL SERVICE – 3,000 cycles or 1,200 days

** Cycle-based default setting; to change the setting contact the Technical Service Department.*
A regular maintenance is essential to achieve the best performance of the device.
Periodically, a message will be displayed requesting that the above maintenance operations are performed.
For further information or in case of doubt, contact the technical service: if they have performed regular maintenance on the device, the technician might have already carried out some of these operations (e.g. >Replacement of the bacteriological filter or of the gasket).

Always keep in mind the following **general warnings**:
- Do not wash the sterilizer with direct jets of water, neither under pressure nor sprinkled. Seepage into electrical and electronic components could damage the functioning of the device or its internal parts, even irreparably;
- Do not use abrasive cloths, metal brushes (or other aggressive materials) or products for metal cleaning, both solid and liquid, to clean the device or the sterilization chamber;
- Do not use unsuitable chemical products or disinfectants to clean the sterilization chamber. In fact, these products can cause damages, even irreparably;
- Do not allow limescale or residues of other substances to accumulate in the sterilization chamber, on the door and on the gasket, but remove them periodically. In fact, such residues may damage these parts, besides compromising the operation of the hydraulic circuit components.

The formation of white spots on the base of the internal wall of the chamber means that you are using poor quality demineralised water.

Before performing ordinary maintenance, make sure that the power cord plug is removed from the mains socket.
If this is not possible, move the external switch of the device’s power supply line to Off.
If the external switch is distant or not visible to the maintainer, place a “work in progress” sign on the switch, after turning it off.



13.3. DESCRIPTION OF MAINTENANCE OPERATIONS

Let's now look at the various operations to be carried out.

13.3.1. GASKET AND PORTHOLE CLEANING

To eliminate any traces of limestone, clean the gasket of the chamber and the door porthole with a clean cotton cloth soaked in a soft solution of water and vinegar (or a similar product, checking the contents on the label before using).

Dry the surfaces and remove any residues before using the device.

13.3.2. CLEANING THE STERILIZATION CHAMBER AND ITS ADDITIONAL COMPONENTS

Clean the sterilization chamber, support and trays (and internal surfaces in general) with a clean cotton cloth soaked in water and, possibly, the addition of a small amount of neutral detergent.

Carefully rinse with distilled water, taking care not to leave any type of residue in the chamber or on the additional components.

Do not use pointed or sharp tools to remove scale from the sterilization chamber.
Should there be evident deposits, immediately check the quality of the distilled water used (see technical characteristics appendix).

13.3.3. CLEANING AND DISINFECTING EXTERNAL SURFACES

To clean and disinfect the external surfaces, we recommend using STER 1 PLUS or ethyl alcohol diluted with 50% water. Apply product with a soaked cloth, then dry.
As an alternative, we recommend using products containing the following at no more than the given concentration:

- **Ethanol:** maximum concentration 30%.
- **1-Propanol** (n-propanol, propyl alcohol, n-propyl alcohol): maximum concentration 20%.
- **Combination of ethanol and propanol:** maximum concentration 40%.

Do not spray or vaporise any product directly on device surfaces.
Flammable liquids.

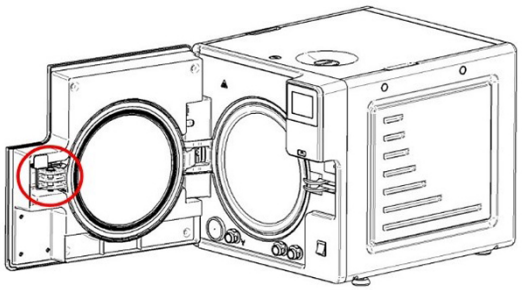
13.3.4. BOILER FILTER CLEANING

With use it is likely that various residues accumulate in the filter and with time obstruct the lower drain duct.
To clean the filter, open the sterilizer door and remove the cap.
Loosen the union that contains the filter.
Remove the filter from its support and thoroughly clean it under a jet of running water, if necessary using a sharp tool to remove any large foreign bodies (if possible use a jet of compressed air).
If it is impossible to recover the filter, replace it with a new one.
Refit everything operating in reverse order and **making sure** to screw the union in such a way that the drain holes are positioned **at the level of the boiler wall**.

Properly fit the filter in its housing.
A partial fitting may damage the component.

13.3.5. DOOR LOCK LUBRICATION

Remove any residue with a clean cloth.
Lubricate the inside of the door catch on the sterilizer door with a film of the grease provided (as shown in the figure).

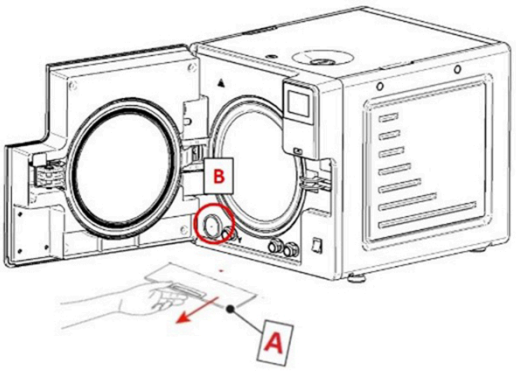


Wear single-use gloves before application.
Essentially, the lubricant is not irritant to the skin; nevertheless, it may cause unpleasant effects if it accidentally comes into contact with eyes.
In case of contact with eyes, rinse with plenty of water.

13.3.6. DUST FILTER CLEANING

Remove the dust filter (**A**) from the lower part of the autoclave, thoroughly rinse it with water and dry it before refitting it.

The filter can be cleaned using a jet of compressed air, making sure not to disperse any dust into the environment.



A Dust filter
B Bacteriological filter

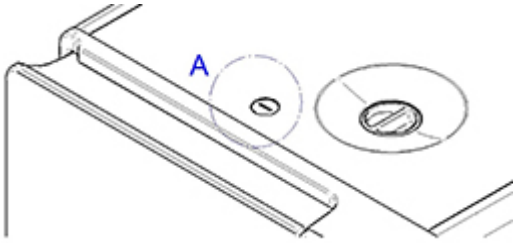
13.3.7. BACTERIOLOGICAL FILTER REPLACEMENT

When filter maintenance is due or every time you notice visible clogging of the filter (indicated by the filter markedly turning grey), unscrew the bacteriological filter from its support and replace it with a new one, screwing it fully down on the union.

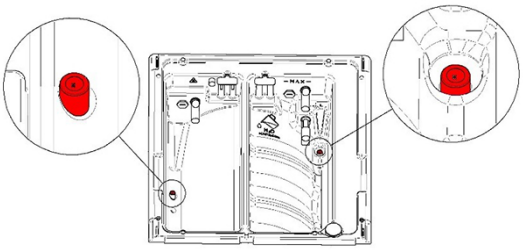
A spare bacteriological filter is provided with the device.
If you need spare parts of this component, refer to technical assistance appendix.

13.3.8. CLEANING AND DISINFECTION OF FILTERS AND WATER TANKS

Remove the upper panel:
1. turning the lock (**A**) anti-clockwise;
2. lifting it from the side grips.



Empty the tanks containing the autoclave load and discharge water, remove any deposits around the filters (highlighted in red) on the bottom of the tanks (see figure).
After removing and cleaning the filters, wipe the inside of the tanks with a cloth soaked in ethyl alcohol 70% and clean thoroughly.
After cleaning the filters, refit them inside the tanks.



13.3.9. BOILER GASKET REPLACEMENT

It is advisable to have the boiler gasket replaced by an authorised technician, therefore contact Technical Service (see **APPENDIX – TECHNICAL SERVICE**).

13.4. PERIODIC STERILIZER VALIDATION

As happens with all devices, it is possible, and sometimes inevitable, to have a decrease in performance and the effectiveness of components along their lifespan, in a period of time dependent on its frequency of use.

To guarantee the safety of the process over time, it is periodically (possibly annually) necessary to **verify** the **thermodynamic process parameters** (pressure and temperature), to check if they continue to remain within allowed limits or not.

The requalification of the sterilizer's performance is the **responsibility of the user** of the product.

The reference European standards **EN 17665** (Sterilization of the medical devices - Method for the validation and systematic control of the steam sterilization) and **EN 556** (Sterilization of the medical devices – Requirements for the medical devices marked with "STERILE" indication) supply an effective guide tool for carrying out the verifications on the steam sterilizers.

Since, in addition to specific experience and training, these controls require the use of special equipment (high-precision sensors and probes, data loggers, dedicated software, etc.) suitably verified and calibrated, it is necessary to contact a company specializing in these activities.

*Customer support department (see **Appendix**) is available to provide any information relative to the periodic validation of steam sterilizers.*

13.5. DEVICE SERVICE LIFE

Water steam sterilizer service life is of 10 years (average use: 5 cycles/day, for 220 days/year). For normal use, it is expected that the device is used and maintained according to the instructions provided by the manufacturer.

13.6. END-OF-LIFE DISPOSAL

According to Directive 2012/19/EU concerning waste disposal, the units must not be disposed of as municipal waste, but must be separated. When purchasing a new device of an equivalent type, one for one, the device that has come to the end of its lifetime should be returned to the dealer for disposal.
As regards reuse, recycling and other forms of recovery of the above mentioned waste, the manufacturer carries out the functions defined in the individual national legislations.
Appropriate differentiated waste collection for subsequent recycling treatment and environmentally friendly disposal contributes to preventing possible negative effects on the environment and health and encourages recycling of the materials of which the device is made up. The symbol indicating separate collection for electrical and electronic equipment consists of the crossed out bin marked on the device.

Under national legislation, fines can be imposed if the product is disposed in an illegal manner.

14. APPENDIX - GENERAL PROBLEMS

If while using the device a problem or an alarm occurs, this **DOES NOT** mean that the device is out of order.
It may not, in fact, be related to a breakdown but, more probably to an anomalous situation, often merely transitory (such as a blackout), or incorrect use.

In any case, it is important to first identify the cause of the failure and then take suitable corrective actions, either autonomously or with the intervention of the **Technical Service Department** (see Appendix).

For this purpose, below, we provide instructions for diagnosing and resolving general problems, in addition to a precise description of the alarm codes, their meaning and their solution.

14.1. TROUBLESHOOTING

If your sterilizer is not working correctly, please make the following checks before contacting the Technical Service Department:

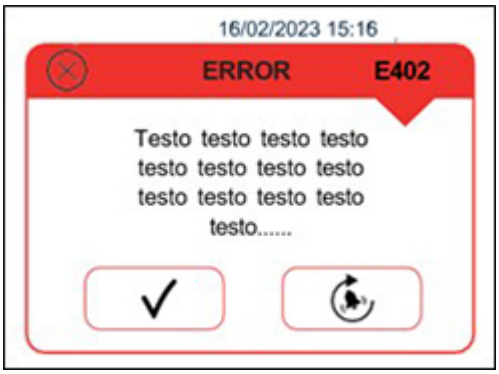
PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
The sterilizer does not power-on.	The power cable is not plugged-in.	Plug it in.
	Lack of voltage at the power supply socket.	Check the cause of the lack of voltage at socket and fix it.
	The main switch and/or differential switch are turned to OFF.	Turn the switch to ON.
	The network fuses are blown.	Replace with good fuses of equal nominal value. (See the Summary Table in Appendix, Technical Characteristics).
After pressing START, the sterilization cycle does not start.	The device is preheating.	Wait for the sterilizer to reach the proper operating conditions for starting the program. ☞ *Under standard conditions, the Average Heating Time is about 10-15 Minutes.*
The safety valve has triggered.	Locking ring loosened. Presence of anomalous overpressure in the chamber.	Check the proper tightening of the milled ring nut of the safety valve. ⚠ **Let the device cool or use gloves to prevent burns while touching the valve.**
Water presence on the sterilizer resting surface.	The water automatic filling system hose (optional) is not correctly connected.	Check the tightness of the fittings and, if necessary, reassemble them more carefully. Check that the hoses are completely inserted on the fittings; check the presence of hose clamps.
	Steam leak from door gasket.	At the end of the cycle clean the gasket and the closing porthole with a dampened cloth. Check the presence of any gasket damage. Perform a new verification cycle.
Excessive humidity on the material and/or instruments at the end of the program.	Excessive load in the sterilization chamber.	Check that the load does not exceed the maximum values permitted. (See the Summary Table in **Appendix** **"Technical Characteristics"**).
	Load not correctly positioned.	Position the load, in particular the wrapped one, as per the indications. (See **Chapter** **"Preparing the material"**).
	Wrong selection of the sterilization program.	Choose the sterilization program suitable for the type of material to be treated. (See the Summary Table **in the Appendix** **"Programs"**).
	Clogged chamber drainage filter.	Clean or replace the drainage filter. (See **Appendix** **"Maintenance"**).
Traces of oxidation or spots on instruments.	Quality of the instruments not adequate.	Check the quality of instruments, making sure that the material they are made of is suitable to tolerate the steam sterilization.
	Quality of the distilled water not adequate.	Empty the tank and fill it with high-quality distilled water. (See Water supply characteristics in **Appendix** **"Technical characteristics"**).
	Organic or inorganic residues on the instruments.	Carefully clean the material before subjecting it to the sterilization cycle. (See **Chapter "Preparing the material").**
	Contact between instruments made of different metals.	Separate instruments made of different metals. (See **Chapter "Preparing the material").**
	Presence of limescale residues on the wall of the chamber and/or additional components.	Clean the chamber and the additional components as prescribed. (See **Appendix "Maintenance"**).
Blackening of the instruments or damage to the material.	Wrong selection of the sterilization program.	Choose the sterilization program suitable for the type of material to be treated. (See the **Summary Table in the Appendix "Programs"**).

15. APPENDIX - ALARM INDICATION

If the problem persists, contact the technical service (see APPENDIX) communicating the sterilizer model and serial number. These data are indicated on the registration plate on the rear side of the device and on the declaration of conformity and can be viewed also by means of the "sterilizer information" command.

Every time an **anomalous condition** occurs during the operation of the sterilizer, an alarm is generated, identified by a specific code (consisting of a letter followed by a 3-digit number).
Alarm codes are divided into **three categories**:

E= ERROR
Non-user dependent fault that prevents the cycle from functioning correctly.
Problem not resettable by the user, technical assistance required.
Code format: **Exxx (xxx= identification number 000 ÷ 999)**



W = WARNING

A fault that does not affect the correct operation of a cycle.
Problem normally resettable by the user.
Code format: **Wxxx (xxx= identification number 000 ÷ 999)**

I = INFO

System notifications.
Generally the user can deactivate them via display choice.
Code format: **Ixxx (xxx= identification number 000 ÷ 999)**

In case of alarm, switch off the device only after having followed the indications displayed and performed the reset (see "System Reset" paragraph).

15.1. ALARM INTERVENTION

The alarm intervention causes the **cycle interruption** (or the normal operation interruption), the display of the relevant **alarm code** and **message** and an **audible warning**.

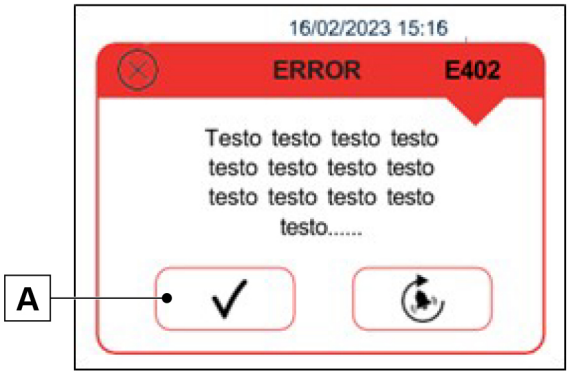
15.2. ALARM DURING CYCLE

The alarm procedure is designed in order not to give the user any possibility to confuse an anomalous cycle with an efficiently carried out one, and therefore to **unintentionally use not sterilized materials**; it is structured to guide the user up to the **PRESET** of the sterilizer and the following use.

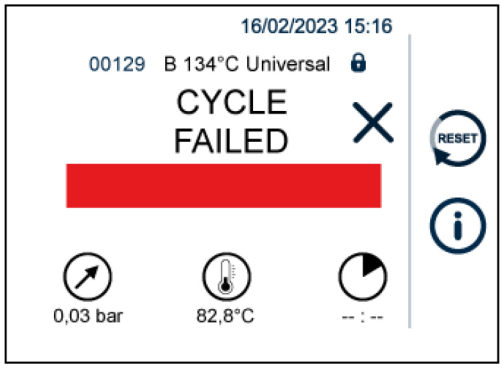
15.3. SYSTEM RESET

The system can be reset in two alternative ways, depending on the type of alarm occurred (see the List of alarm codes below in this appendix):

1. Pressing the button (**A**);
2. Following the instructions displayed and then pressing the RESET button.



Pressing the RESET button returns to the main menu.



After the RESET and any technical operation necessary to eliminate the fault, the device will be ready to perform a new program.

Never turn off the device before carrying out the reset.

16. ALARM CODES

The list of alarm codes, the relevant messages displayed and RESET modes, are indicated in the following table:

16.1. ERRORS (CATEGORY E)

The alarm codes in the list can refer to functions that are not present on the models concerned in this Manual.

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
E000	Blackout	Power failure	**2.3**
E001	Overvoltage	Overvoltage Contact tech. service	**2.3**
E004	Network frequency reading error	Network freq. error Contact tech. service	**2.3**
E005	Voltage below acceptable limit	Voltage below limit	**2.3**
E032	Filling tank Inconsistency between full and empty tank floats	Filling tank sensor problem Contact tech. service	**2.3**
E033	Discharge tank Inconsistency between full and empty tank floats (PLATINUM only)	Discharge tank sensor problem Contact tech. service	**2.3**
E034	Structural integrity error on RAM data and parameters used in the cycle	System error. Restart the machine. If the problem persists, contact the Technical Service Dept.	**2.3**
E035	Recirculation filter removed during cycle	Discharge tank filter removed during cycle	**2.3**
E036	SW watchdog	System error. Restart the machine. If the problem persists, contact the Technical Service Dept.	**2.3**
E037	Error executing FW	System error. Restart the machine. If the problem persists, contact the Technical Service Dept.	**2.3**
E040	Data saving error Contact tech. service	Error while saving a Log in the flash memory	**2.3**
E041	Incorrect sterilization time	Error in the selection of process time 5.5’ or 10’ option for the concerned cycles only	**2.3**
E095	Exception in the application's operation	System error. Restart the machine. If the problem persists, contact the Technical Service Dept.	**2.3**
E096	HW watchdog	System error. Restart the machine. If the problem persists, contact the Technical Service Dept.	**2.3**
E099	Problem during cycle report generation	Problem during cycle report creation	**2.3**
E100	Internal management control of the state machine that manages the process	System error Contact tech. service	**2.3**
E101	PT1 probe open circuit (chamber)	PT1 open circuit (chamber probe) Contact tech. service	**2.3**
E102	PT2 probe open circuit (steam generator)	PT2 open circuit (generator probe) Contact tech. service	**2.3**
E103	PT3 probe open circuit (heating band)	PT3 open circuit (heating band probe) Contact tech. service	**2.3**
E104	NTC probe open circuit (exchanger)	NTC open circuit (exchanger probe) Contact tech. service	**2.3**
E105	Conductivity probe open circuit	Conductivity sensor open circuit Contact tech. service	**2.3**
E111	PT1 probe reading error (chamber)	PT1 error (chamber probe) Contact tech. service	**2.3**
E112	PT2 probe reading error (steam generator)	PT2 error (generator probe) Contact tech. service	**2.3**
E113	PT3 probe reading error (heating band)	PT3 error (heating band probe) Contact tech. service	**2.3**
E114	NTC probe reading error (exchanger)	NTC error (exchanger probe) Contact tech. service	**2.3**

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
E115	Conductivity sensor reading error	Conductivity sensor error Contact tech. service	**2.3**
E116	Generic HW error	Board fault Contact tech. service	**2.3**
E117	Door motor overcurrent error	Motor Door overcurrent	**2.3**
E120	1k3 reference resistor error	Board fault Contact tech. service	**2.3**
E121	1k5 reference resistor error	Board fault Contact tech. service	**2.3**
E122	1k8 reference resistor error	Board fault Contact tech. service	**2.3**
E123	Micro NAND (large) external flash memory error on process board.	Flash memory error Contact tech. service	**2.3**
E124	Micro NOR (small) external flash memory error on process board.	Flash memory error Contact tech. service	**2.3**
E128	Communication error with ESP32	Wi-Fi module fault Contact tech. service	**2.3**
E129	Communication error with NFC board	NFC board fault Contact tech. service	**2.3**
E140	Error during update file transmission.	Wi-Fi module FW update error	**2.3**
E143	FW update error	Error during firmware update	**2.3**
E144	Missing video tutorial! Repeat tutorial update.	No video tutorials found in memory	**2.3**
E145	Total current measurement fault (too high or too different from estimated value).	Faulty current draw Contact tech. service	**2.3**
E146	Fault signal from solenoid valve driver	Solenoid valve driver fault Contact tech. service	**2.3**
E147	Fault signal from door motor driver	Door motor driver fault Contact tech. service	**2.3**
E148	Copy only one tutorial update .ZIP file to the USB stick	More than one .ZIP file found on USB stick and FW does not know which one to use	**2.3**
E150	PRESS sensor open circuit (chamber)	Pressure sensor open circuit Contact tech. service	**2.3**
E160	PRESS sensor short circuit (chamber)	Pressure sensor error Contact tech. service	**2.3**
E201	Generator resistor open (not heating)	Steam generator heating failed Contact tech. service	**2.3**
E202	Heating band resistor open (not heating)	Heating band heating failed Contact tech. service	**2.3**
E250	Error during lowering to 1PV	Error 1° vacuum lowering (1PV) Check filling Check chamber filter	**2.3**
E251	Error during pressure rise from 1PV to TMJ1	Error 1° pressure rise (1PV-TMJ1) Contact tech. service	**2.3**
E252	Error during pressure rise from TMJ1 to 1PP	Error 1° pressure rise (TMJ1-1PP) Contact tech. service	**2.3**
E253	Error during lowering to 2PV	Error 2° vacuum lowering (2PV) Check filling Check chamber filter	**2.3**
E254	Error during pressure rise from 2PV to TMJ2	Error 2° pressure rise (2PV-TMJ2) Contact tech. service	**2.3**
E255	Error during pressure rise from TMJ2 to 2PP	Error 2° pressure rise (TMJ2-2PP) Contact tech. service	**2.3**
E256	Error during lowering to 3PV	Error 3° vacuum lowering (3PV) Check filling Check chamber filter	**2.3**
E257	Error during pressure rise from 3PV to TMJ3	Error 3° pressure rise (3PV-TMJ3) Contact tech. service	**2.3**
E258	Error during pressure rise from TMJ3 to 3PP (ET)	Error 3° pressure rise (TMJ3-3PP) Contact tech. service	**2.3**

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
E260	Error during steam discharge from SE at TMJ3 atmospheric pressure	Pressure discharge error (SE-TMJ3) Contact tech. service	**2.3**
E261	Chamber pressure levelling error	Pressure levelling error Contact tech. service	**2.3**
E262	Pressure pulses error in chamber during drying	Drying error (pressure rise) Contact tech. service	**2.3**
E353	Error during steam discharge from 1PP at TMJ1 atmospheric pressure	Pressure discharge error (1PP-TMJ1) Contact tech. service	**2.3**
E356	Error during steam discharge from 2PP at TMJ2 atmospheric pressure	Pressure discharge error (2PP-TMJ2) Contact tech. service	**2.3**
E360	Vacuum phase error up to SPD	Vacuum lowering error (TMJ3-SPD) Contact tech. service	**2.3**
E362	Vacuum phases error during lowering in drying	Drying error (vacuum lowering) Contact tech. service	**2.3**
E400	SteamT too high compared to PT1 during process	Wrong P/T ratio Check filling Relaunch the cycle	**2.3**
E401	PT1 too high compared to steamT during process	Wrong P/T ratio Check filling Relaunch the cycle	**2.3**
E402	PT1 too high during process	Temperature above maximum limit Contact tech. service	**2.3**
E403	PT1 too low during process	Temperature below minimum limit Contact tech. service	**2.3**
E404	Difference between PT1 max and min too high during process	Unstable temperature Contact tech. service	**2.3**
E405	PRESS too high during process	Pressure above maximum limit Contact tech. service	**2.3**
E406	PRESS too low during process	Pressure below minimum limit Contact tech. service	**2.3**
E410	Internal timer error	Board timer fault Contact tech. service	**2.3**
E411	Error in sterilization time, verified with double variables	Sterilization time error	**2.3**
E500	17-22-28 Water conductivity above 60 uS/cm and more than 5 cycles performed (manual filling or automatic filling no PURE and water filling from Load tank). Signal at cycle start.	Autoclave blocked Unsuitable water quality Change water	**2.3**
E501	17-22-28/PLUS/PLATINUM Water conductivity above 60 uS/cm and more than 5 cycles performed (automatic filling with PURE and water filling from Load tank). Signal at cycle start (17-22-28) or Cycle stopped (PLUS/ PLATINUM).	Autoclave blocked Unsuitable water quality Empty the tank Replace pure filters	**2.3**
E503	PLUS/PLATINUM Water conductivity above 60 uS/cm and more than 5 cycles performed (manual filling or automatic filling no PURE or with integrated DEMI filter and water filling from Load tank). Cycle stopped.	Autoclave blocked Unsuitable water quality Replace integrated filter (if present) Change water	**2.3**
E531	Error from solenoid valve driver on EV1	Solenoid valve 1 fault Contact tech. service	**2.3**
E532	Error from solenoid valve driver on EV2	Solenoid valve 2 fault Contact tech. service	**2.3**
E533	Error from solenoid valve driver on EV3	Solenoid valve 3 fault Contact tech. service	**2.3**
E534	Error from solenoid valve driver on EV4	Solenoid valve 4 fault Contact tech. service	**2.3**
E535	Error from solenoid valve driver on EV5	Solenoid valve 5 fault Contact tech. service	**2.3**
E536	Error from solenoid valve driver on EV6	Solenoid valve 6 fault Contact tech. service	**2.3**

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
E537	Error from solenoid valve driver on EV7	Solenoid valve 7 fault Contact tech. service	**2.3**
E550	Error during door locking (catch closing)	Door locking error Try again Contact tech. service	**2.3**
E551	Error during door unlocking (catch opening)	Door unlocking error Contact tech. service	**2.3**
E552	Status error of the front switch of the door locking system	Door locking system error Contact tech. service	**2.3**
E553	Status error of the switch of the door locking system catches	Door locking system error Contact tech. service	**2.3**
E554	Door encoder error Contact tech. service	Door motor encoder not working	**2.3**
E570	USB removed during use Contents may be corrupted	USB removed too soon while writing	**2.3**
E900	Error in second phase during Vacuum Test	Vacuum Test failed (second phase) Contact tech. service	**2.3**
E901	Error in first phase during Vacuum Test	Vacuum Test failed (first phase) Contact tech. service	**2.3**
E902	Error in achieving the vacuum value required for Vacuum Test	Vacuum test failed Vacuum not reached Contact tech. service	**2.3**
E990	PRESS too high (not phase dependent)	Pressure above maximum limit Contact tech. service	**2.3**
E991	PT1 overheating	PT1 overheating Check filling	**2.3**
E992	PT2 overheating	PT2 overheating Contact tech. service	**2.3**
E993	PT3 overheating	PT3 overheating Contact tech. service	**2.3**
E994	Radiator NTC overheating	High discharge fluid temperature Check correct machine ventilation	**2.3**
E999	Manually interrupting the cycle	Manual interruption of the cycle	**2.3**

1 = OK (warning)
2 = OK + Stopped cycle start
3 = Cycle failed + OK + RESET

16.2. WARNING (CATEGORY W)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
W001	Confirmation of chamber cooling wait to start Vacuum Test	Chamber temperature too high Test start postponed Do you want to wait?	**1**
W002	17-22-28 Water conductivity above 15 uS/cm (manual filling or automatic filling no PURE and water filling from Filling tank). Signal at cycle start.	Insufficient water quality	**1**
W003	17-22-28 Water conductivity above 60 uS/cm and less than 5 cycles performed (manual filling or automatic filling no PURE and water filling from Filling tank). Signal at cycle start.	Unsuitable water quality Change water	**1**
W004	PLATINUM Water conductivity above 60 uS/cm (with integrated RECIRCULATION filter and water filling from Discharge tank). Signal at cycle end.	Filters exhausted Water recirculation disabled Replace integrated filters	**1**
W005	Problem accessing USB key	USB stick problem Replace the stick	**1**
W006	Error opening a file on USB key (reading/writing)	USB stick not accessible Replace the stick	**1**
W008	17-22-28/PLUS/PLATINUM Water conductivity above 15 uS/cm (automatic filling with PURE and water filling from Filling tank). Signal at cycle start (17-22-28) or cycle end (PLUS/PLATINUM).	Filters nearly exhausted	**1**
W009	17-22-28/PLUS/PLATINUM Water conductivity above 60 uS/cm and less than 5 cycles performed (automatic filling with PURE and water filling from Filling tank). Signal at cycle start (17-22-28) or cycle end (PLUS/PLATINUM).	Unsuitable water quality Empty the tank Replace pure filters	**1**
W010	Open door	Open door Close door	**1**
W011	Check the door Please, open and then close the door	Check the door position if it does not open	**1**
W012	PLATINUM Number of cycles with RECIRCULATION filter exhausted, or water conductivity level too high (with RECIRCULATION filter fitted). Signal at machine switch-on and when cycle ends.	Filters exhausted Water recirculation disabled Replace integrated filters	**1**
W014	Request to perform a service maintenance	Authorize remote connection?	**1**
W015	USB stick full	USB stick full Replace the stick	**1**
W016	Communication with printer failed	Printer disconnected Check connection	**1**
W017	Printer: no paper	Printer paper fault	**1**
W018	Printer: door open	Printer door open	**1**
W019	Generic error from printer that does not issue a precise message	Printer fault	**1**
W022	PLUS/PLATINUM Water conductivity above 15 uS/cm (manual filling or automatic filling no PURE or with integrated DEMI filter and water filling from Filling tank). Signal at cycle end.	Insufficient water quality Integrated water filter nearly exhausted (if present)	**1**
W023	PLUS/PLATINUM Water conductivity above 60 uS/cm and less than 5 cycles performed (manual filling or automatic filling no PURE or with integrated DEMI filter and water filling from Filling tank). Signal at cycle end.	Unsuitable water quality Replace integrated filter (if present) Change water	**1**
W030	Load tank in reserve	Filling tank minimum level Fill the tank	**1**
W031	Discharge tank full For PLATINUM disabled if recirculation active	Discharge tank maximum level Empty the tank	**1**

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
W040	Tank filling with automatic filling failed	No water entry Check automatic filling	**1**
W041	Load tank maximum level error (automatic filling)	Automatic filling Tank maximum level reached	**1**
W042	Load tank maximum level error (manual filling)	Manual filling Tank maximum level reached	**1**
W043	Load tank maximum level error (with active recirculation)	Discharge tank maximum level reached Empty the tank	**1**
W060	LAN connection error due to Ethernet configuration parameters	Ethernet config. fault Check settings	**1**
W061	Wi-Fi connection error due to Wi-Fi configuration parameters	Wi-Fi config. fault Check settings	**1**
W070	Remote printer not shared	Shared printer function deactivated	**1**
W071	Connection problems with the remote printer. Try again	General connection problems with the printer. Displayed only in case of remote printing and refers to a network connection problem.	**1**
W102	NFC overwrite request	NFC already associated with a user, overwrite?	**1**
W104	Error the selected user is not associated with the NFC found	The user selected is NOT associated to this NFC	**1**
W131	The selected user is not authorised to start or download the cycle	User not authorised	**1**
W141	The Process FW has detected a mismatch with the Cloud FW. This inconsistency can lead to malfunctions in connectivity to the practice SW or the Cloud.	Incorrect Wi-Fi module FW version Update the FW	**1**
W201	Periodic maintenance. Default 250 cycles or 120 days.	Clean chamber filter	**1**
W202	Periodic maintenance. Default 500 cycles or 180 days.	Clean dust filter Clean water tanks Replace bacteriological filter	**1**
W203	Periodic maintenance. Default 1,000 cycles or 365 days.	Replace door gasket Lubricate the door locking system	**1**
W204	Periodic maintenance. Default 3,000 cycles or 1,200 days.	Perform periodic maintenance Contact tech. service	**1**
W205	Periodic maintenance is about to expire W202. To be shown from 100 cycles or 30 days before expiry.	Bacteriological filter to be replaced in xx cycles/ days	**1**
W206	Periodic maintenance is about to expire W202. To be shown from 50 cycles or 15 days before expiry.	Bacteriological filter to be replaced in xx cycles/ days	**1**
W207	Periodic maintenance is about to expire W203. To be shown from 100 cycles or 30 days before expiry.	Door gasket to be replaced in xx cycles/days	**1**
W208	Periodic maintenance is about to expire W203. To be shown from 50 cycles or 15 days before expiry.	Door gasket to be replaced in xx cycles/days	**1**
W209	Periodic maintenance is about to expire W204. To be shown from 100 cycles or 30 days before expiry.	Maintenance required in xx cycles/days Contact tech. service	**1**
W215	Bacteriological filter to be replaced in XX days	Periodic maintenance W202 due. Displayed 30 days before expiry	**1**
W216	Bacteriological filter to be replaced in XX days	Periodic maintenance W202 due. Displayed 15 days before expiry	**1**
W217	Door gasket to be replaced in XX days	Periodic maintenance W203 due. Displayed 30 days before expiry	**1**
W218	Door gasket to be replaced in XX days	Periodic maintenance W203 due. Displayed 15 days before expiry	**1**
W219	Maintenance required in XX days Contact tech. service	Periodic maintenance W204 due. Displayed 30 days before expiry	**1**
W230	Confirm maintenance has been carried out?	Confirm that maintenance has been carried out	**1**
W231	Password error	Wrong password or PIN entered	**1**

1 = OK (warning)

2 = OK + Stopped cycle start
3 = Cycle failed + OK + RESET

16.3. INFO (CATEGORY I)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET MODE
I001	Reset to factory settings (from Service menu)	Reset initial settings Do you confirm?	**1**
I002	User deletion confirmation	Delete user Do you confirm?	**1**
I004	Request for confirmation that the filter has been replaced (at power-on with expired maintenance or error due to high conductivity, or with machine on when a filter is inserted in the discharge tank).	Filter installed/replaced Do you confirm?	**1**
I005	Confirmation for performing FW update	New FW available Do you want to perform the update?	**1**
I008	Identifier of a new User you want to create, already in memory.	User already in memory or already used	**1**
I020	Number of cycles has been exhausted without downloading in New mode	Run backup Download new cycles	**1**
I021	Flash data overwriting start	Cycle memory full Start of overwriting	**1**
I030	Pressure levelling in progress Please wait…	Request to unlock the door with pressure too low, wait for pressure levelling	**1**
I050	Vacuum Test performance reminder	Test reminder Perform Vacuum Test	**1**
I051	Helix Test performance reminder	Test reminder Perform Helix/B&D Test	**1**
I052	Vacuum Test + Helix Test performance reminder	Test reminder Perform Vacuum + Helix/B&D Test	
I070	With preheating active and with the door open, after 10 min and after 20 min the pop-up is shown.	Preheating activated It is advisable to close the door	**1**
I073	Printer busy. Please wait...	Remote print request failed because the printer is busy with another device.	**1**
I080	When minimum modular drying is selected, the user is requested to confirm that the correct load has been inserted.	Minimum drying set: make sure that the load has been reduced. Confirm?	**1**
I100	Prompt to associate an NFC with the selected user	Associate an NFC to the user?	**1**
I101	Request to move the NFC card closer to the sensor	Move the NFC to be associated closer The NFC data will be erased	**1**
I103	NFC successfully associated with the selected “XX” user	NFC successfully associated with xxx	**1**
I126	Esp32 update in progress	Wi-Fi FW update Please wait…	**1**
I127	FW update Please wait…	FW update in progress. Wait for it to finish	**1**
I130	Configuration saved Switch the device off and on	Configuration saved, please turn the device off and on again	**1**
I131	Safety lock Maintenance in remote or via App in progress	Display lock due to an activity in progress from the App or in Remote	**1**
I998	Cycle Reset request at the end of failed cycle	Do you conf. reset? Caution, unsterilized material	**1**
I999	Cycle Stop request in progress	Cycle interruption. Do you confirm?	**1**

1 = OK (warning)
2 = OK + Stopped cycle start
3 = Cycle failed + OK + RESET

16.4. TROUBLESHOOTING

According to the **type of alarm** occurred, please find below the indications to detect the possible causes and restore the proper operation:

16.4.1. ERRORS (CATEGORY E)

The alarm codes in the list can refer to functions that are not present on the models concerned in this Manual.

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
E000	Sudden power failure (blackout).	Wait for the power to be restored and RESET following the instructions.
	The main switch has accidentally been turned off and/or the power plug pulled from the socket.	Reconnect the plug and/or turn the device on again and RESET according to the instructions.
	Network fuses blown.	Replace with good fuses of equal nominal value. (See the Summary Table in Appendix Technical Characteristics). Turn the device on again and RESET according to the instructions.
E001	Abnormal voltage peak on the mains.	Reset according to the instructions. If the problem occurs again, have the mains electric system checked by a technician.
E004	Failure to main board.	RESET according to the instructions. Contact Technical Service (see Appendix).
	Disturbance on the electrical mains.	RESET according to the instructions. If the problem occurs again, have the electrical mains checked by a technician. If the electrical mains is equipped with a Continuity system, have the system checked by a technician.
E005	Supply voltage value out of limits – check supply voltage	RESET according to the instructions. Disconnect the power cable and check the mains voltage. The value must be within the rated voltage limits +/- 10%.
E032	Water level in the load tank below minimum.	RESET according to the instructions. Top up with water up to the MAX level (or at least up to over the MIN level).
	MIN water level sensor failure.	Contact Technical Service (see Appendix).
E033	Water level in the drain tank over the MAX level.	RESET according to the instructions and empty the tank. Completely drain the drain tank.
	MAX water level sensor failure.	Contact Technical Service (see Appendix).
E034	Malfunction of the control software.	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E035	Recirculation filter removal.	End the fail cycle. Reinsert the filter and restart the sterilization cycle.
E036	Malfunction of the control software.	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E037	FW malfunction	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E040	Malfunction of the control software.	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E041	Malfunction of the control software.	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E095	Malfunction of the control software.	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E096	HW watchdog	RESET according to the instructions. Try restarting the program a second time. If the problem persists, contact Technical Service (see Appendix).
E099	FW malfunction	Try turning the device off and then on again. Contact Technical Service (see Appendix).
E100	FW malfunction	Try turning the device off and then on again. Contact Technical Service (see Appendix).
E101	Chamber temperature sensor failure (PT1).	Contact Technical Service (see Appendix).
E102	Steam generator temperature sensor failure (PT2).	
E103	Heating element temperature sensor failure (PT3).	

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
E104	Discharge fluid temperature sensor failure (NTC).	
E105	PT5 temperature sensor failure (conductivity measurement compensation).	
E111	Chamber temperature sensor reading fault (PT1).	Contact Technical Service (see Appendix).
E112	Steam generator temperature sensor reading fault (PT2).	
E113	Heating element temperature sensor reading fault (PT3).	
E114	Discharge fluid temperature sensor reading fault (NTC)	
E115	PT5 temperature sensor reading fault (conductivity measurement compensation)	
E116	HW fault	Contact Technical Service (see Appendix).
E117	Current drawn by door motor over limit	Grease door pin. Contact Technical Service (see Appendix).
E120	Reference heating element acquisition chain fault.	Contact Technical Service (see Appendix).
E121	Reference heating element acquisition chain fault.	
E122	Reference heating element acquisition chain fault.	
E123	Flash memory damaged.	Contact Technical Service (see Appendix).
	Electronic board damaged.	
E124	Flash memory damaged.	Contact Technical Service (see Appendix).
	Electronic board damaged.	
E128	Connection error with Wi-Fi module	Contact Technical Service (see Appendix).
E129	Error executing FW NFC component failure FW not updated	Try turning the device off and then on again. Update the FW. Contact Technical Service (see Appendix).
E140	Error during update file transmission	Contact Technical Service (see Appendix).
E143	Error during update file transmission	Contact Technical Service (see Appendix).
E144	Error during update file transmission	Contact Technical Service (see Appendix).
E145	Faulty current draw detected	Check mains voltage. Contact Technical Service (see Appendix).
E146	Solenoid valves control driver fault	Contact Technical Service (see Appendix).
E147	Door motor control driver fault	Contact Technical Service (see Appendix).
E148	More than one .ZIP file found on USB stick	Copy only one tutorial update .ZIP file to the USB stick.
E150	Pressure sensor failure (MPX).	Contact Technical Service (see Appendix).
E160	Pressure sensor (MPX) not properly connected to the connector.	Contact Technical Service (see Appendix).
	Pressure sensor short circuit (MPX).	
E201	Steam generator safety thermostat triggered.	Contact Technical Service (see Appendix).
	Steam generator or heating element malfunction.	
E202	Heating band safety thermostat triggered.	Contact Technical Service (see Appendix).
	Heating band malfunction.	
E250	Water or condensate in the sterilization chamber.	RESET according to the instructions. Thoroughly dry the inside of the sterilization chamber and restart the cycle. Do not insert material impregnated with water or in general with liquids into the chamber.
	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the cycle.
	Vacuum pump failure.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
E251	Water injection pump malfunction.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	
	Steam generator safety thermostat triggered.	
	Steam generator malfunction.	
E252	Steam seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the cycle.
	Excessive load.	RESET according to the instructions. Check that the load does not exceed the maximum values allowed (See the Summary Table in Appendix “Technical Characteristics”).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
	Steam generator safety thermostat triggered.	
	Steam generator malfunction.	
E253	Water or condensate in the sterilization chamber.	RESET according to the instructions. Thoroughly dry the inside of the sterilization chamber and restart the program. Do not insert material impregnated with water or in general with liquids into the chamber.
	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Vacuum pump failure.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	
E254	Water injection pump malfunction.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	
	Steam generator safety thermostat triggered.	
	Steam generator malfunction.	
E255	Steam seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Excessive load.	RESET according to the instructions. Check that the load does not exceed the maximum values allowed (See the Summary Table in Appendix “Technical Characteristics”).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
	Steam generator safety thermostat triggered.	
	Steam generator malfunction.	
E256	Water or condensate in the sterilization chamber.	RESET according to the instructions. Thoroughly dry the inside of the sterilization chamber and restart the program. Do not insert material impregnated with water or in general with liquids into the chamber.
	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Vacuum pump failure.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	
E257	Steam seepage through the gasket.	Contact Technical Service (see Appendix).
	Excessive load.	
	Problem in the hydraulic circuit.	
	Steam generator safety thermostat triggered.	
E258	Steam seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
	Excessive load.	RESET according to the instructions. Check that the load does not exceed the maximum values allowed (See the Summary Table in Appendix "Technical Characteristics").
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
	Steam generator safety thermostat triggered.	
	Steam generator malfunction.	
E260	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E261	Bacteriological filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E262	Bacteriological filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E353	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E356	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E360	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E362	Drain filter obstructed.	Clean the drain filter (see Appendix Maintenance).
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E400	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E401	Problem in the hydraulic circuit.	
E402	Steam generator malfunction.	
	Problem in the hydraulic circuit.	
E403	Steam generator malfunction.	
	Problem in the hydraulic circuit.	
E404	Problem in the hydraulic circuit.	
	Steam generator malfunction.	
E405	Problem in the hydraulic circuit.	
	Steam generator malfunction.	
E406	Problem in the hydraulic circuit.	
	Steam generator malfunction.	
E410	Timer problem.	
E411	Sterilization time error.	
E500	Use of low quality demineralised water – check label data	Empty the load tank, fill with demineralised water that complies with the limit of 15 µS.
	Conductivity sensor problem	Contact Technical Service (see Appendix).
E501	Use of low quality demineralised water – PURE filter exhausted	Deactivate the automatic filling System, empty the load tank and replace the PURE filters.
	Conductivity sensor problem	Contact Technical Service (see Appendix).
E503	Use of low quality demineralised water – integrated filter exhausted	Empty the load tank and replace the integrated filter.
	Use of low quality demineralised water – check label data	Empty the load tank, fill with demineralised water that complies with the limit of 15 µS.
	Conductivity sensor problem	Contact Technical Service (see Appendix).
E531	Solenoid valve 1 broken	Contact Technical Service (see Appendix).
	Electronic board problem.	
E532	Solenoid valve 2 broken	
	Electronic board problem.	
E533	Solenoid valve 3 broken	
	Electronic board problem.	
E534	Solenoid valve 4 broken	

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
	Electronic board problem.	
E535	Solenoid valve 5 broken	
	Electronic board problem.	
E536	Solenoid valve 5 broken	
	Electronic board problem.	
E537	Solenoid valve 5 broken	
	Electronic board problem.	
E550	Closed door detection microswitch failure – check the microswitch	Contact Technical Service (see Appendix).
	Locking system safety pressure switch failure – check the pressure switch	
	Door locking servo motor failure – check servo motor operation.	
	Door double catch / pin engagement problem – check proper engagement	
E551	Door microswitch failure – check microswitches.	Contact Technical Service (see Appendix).
	Door locking servo motor failure – check servo motor operation.	
	Door double catch / pin disengagement problem	
E552	Check door microswitch wiring	Contact Technical Service (see Appendix).
	Check door microswitch	
E553	Check catch microswitch wiring	Contact Technical Service (see Appendix).
	Check catch microswitch	
E554	Door motor encoder malfunction.	Contact Technical Service (see Appendix).
E570	USB removed during download/upload.	Format the USB stick and then reinsert it.
E900	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E901	Excessive humidity in the sterilization chamber.	RESET according to the instructions. Thoroughly dry the inside of the chamber and restart the program.
	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
E902	Excessive humidity in the sterilization chamber.	RESET according to the instructions. Thoroughly dry the inside of the chamber and restart the program.
	Air seepage through the gasket.	RESET according to the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Vacuum pump failure.	Contact Technical Service (see Appendix).
	Problem in the hydraulic circuit.	
E990	General operating problem.	Contact Technical Service (see Appendix).
E991	General operating problem.	
E992	General operating problem.	
E993	General operating problem.	
E994	Problem in the hydraulic circuit.	Contact Technical Service (see Appendix).
	Incorrect machine installation	Check that the machine is correctly installed and that it is properly aerated.
E999	Manual interruption of the sterilization or test cycle.	RESET according to the instructions.

16.4.2. WARNING (CATEGORY W)

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
W001	Chamber temperature too high to perform a Vacuum Test	Wait for the temperature to cool down before running the cycle
W002	The filling tank contains water of inadequate quality (>15 µS/cm)	RESET according to the instructions. Empty the filling tank and refill it with distilled water of adequate quality (<15 µS/cm).
W003	The filling tank contains water of inadequate quality (>60 µS/cm)	RESET according to the instructions. Empty the filling tank and refill it with distilled water of adequate quality (<15 µS/cm).
W004	The filling tank contains water of inadequate quality (>60 µS/cm)	RESET according to the instructions. Empty the filling tank and refill it with distilled water of adequate quality (<15 µS/cm). Empty the discharge tank and replace the recirculation filter.
W005	Pendrive is not formatted correctly	Format the pendrive or try a different pendrive
W006	Pendrive is not formatted correctly	
W008	The filling tank contains water of inadequate quality (>15 µS/cm) in the presence of an automatic filling system with Pure	RESET according to the instructions. Disable the automatic filling system and empty the load tank. Replace the Pure filters and reactivate the automatic filling.
W009	The filling tank contains water of inadequate quality (>60 µS/cm) in the presence of an automatic filling system with Pure	RESET according to the instructions. Disable the automatic filling system and empty the load tank. Replace the Pure filters and reactivate the automatic filling.
W010	Door opening in progress	Wait for the door to open
W011	Failure to recognise open door	Open and then close the door
W012	Number of cycles required for the recirculation filter has been exhausted	RESET according to the instructions. Empty the filling tank and refill it with distilled water of adequate quality (<15 µS/cm). Empty the discharge tank and replace the recirculation filter.
W014	Service maintenance required	Authorize remote connection
W015	USB stick full	Format the pendrive or try a different pendrive
W016	Incorrect printer wiring	Check printer connection
	Printer off	Turn on the printer
W017	Printer: no paper	Add paper to the printer
W018	Printer door open	Close printer door
W019	Faulty printer	Check the printer correct operation or change printer
W022	The filling tank contains water of inadequate quality (>15 µS/cm) in the presence of integrated demi filter	RESET according to the instructions. Empty the filling tank, replace the integrated demi filter and refill the tank with distilled water of adequate quality (<15 µS/cm).
W023	The filling tank contains water of inadequate quality (>60 µS/cm) in the presence of integrated demi filter	RESET according to the instructions. Empty the filling tank, replace the integrated demi filter and refill the tank with distilled water of adequate quality (<15 µS/cm).
W030	Filling water level at minimum	Add demi water to the load tank
W031	Discharge water level at maximum	Empty the discharge tank
W040	Automatic filling system solenoid valve failure	Replace the solenoid valve
	Water mains connection closed	Open the water mains connection (tap)
	Pure softening system clogging	Replace Pure filters
W041	Filling tank maximum level reached (automatic filling)	Wait for automatic filling deactivation
W042	Filling tank maximum level reached (manual filling)	Stop filling the load tank
W043	Discharge tank maximum level reached (with active recirculation)	Empty the discharge tank
W060	Error in data entered for Ethernet configuration	Re-enter the correct Ethernet parameters
W061	Error in data entered for Wi-Fi configuration	Re-enter the correct Wi-Fi parameters
W070	Shared printer function deactivated	On the autoclave, to which the printer is connected, set the shared printer function to ON.
W071	Problems with the network connection used by the remote printer	Check that the autoclave, connected to the remote printer, is correctly connected to the network.
W102	NFC overwrite request	Do or do not proceed with NFC overwriting
W104	Error the selected user is not associated with the NFC found	Associate the NFC with the new user or select the correct user

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
W131	User not authorised to start or download the cycle	Other user required
W141	Inconsistency between FW and Wi-Fi module	Update the FW
W201	Periodic maintenance required	Clean chamber filter
W202	Periodic maintenance required	Clean dust filter Clean water tanks Replace bacteriological filter
W203	Periodic maintenance required	Replace door gasket Lubricate the door locking system
W204	Periodic maintenance required	Perform periodic maintenance Contact Technical Service (see Appendix).
W205	Maintenance due date W201 approaching	See error W201
W206	Maintenance due date W202 approaching	See error W202
W207	Maintenance due date W203 approaching	See error W203
W208	Maintenance due date W204 approaching	See error W204
W209	Maintenance due date W205 approaching	See error W205
W215	Periodic maintenance W202 due. Displayed 30 days before expiry.	Acknowledge the pop-up by ticking the box.
W216	Periodic maintenance W202 due. Displayed 15 days before expiry.	Acknowledge the pop-up by ticking the box.
W217	Periodic maintenance W203 due. Displayed 30 days before expiry.	Acknowledge the pop-up by ticking the box.
W218	Periodic maintenance W203 due. Displayed 15 days before expiry.	Acknowledge the pop-up by ticking the box.
W219	Periodic maintenance W204 due. Displayed 30 days before expiry.	Acknowledge the pop-up by ticking the box. Contact Technical Service (see Appendix).
W230	Request of carried out maintenance	Confirm that maintenance has been carried out
W231	Wrong password	Enter the correct password

16.4.3. INFO (CATEGORY I)

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
I001	Request to confirm reset to factory settings (from service menu only)	Confirm the action or not
I002	Request to confirm user deletion	Confirm the action or not
I004	Request to confirm filter replacement	Confirm whether or not the filter has been replaced
I005	Request to confirm FW update execution	Confirm the FW update or not
I008	User overwrite request	Confirm overwriting or not
I020	Cycle download required	Perform cycle backup
I021	Cycle download required (overwrite)	Perform cycle backup
I030	Request to unlock the door with pressure too low	Wait for pressure to level out
I050	Vacuum Test performance reminder	Perform Vacuum Test
I051	Helix Test performance reminder	Perform Helix Test
I052	Vacuum Test + Helix Test performance reminder	Perform Vacuum Test + Helix Test
I070	Door open during preheating	Close door
I073	Remote printer busy	Wait until the remote printer is free
I100	NFC association request	Confirm whether or not to associate the NFC with the selected user
I101	Request to move NFC closer	Move the NFC card closer to the sensor
I103	NFC association with user performed	Close notification
I126	Esp32 update in progress	Wait for the update to complete
I127	FW update in progress	Wait for it to finish
I130	Configuration saved	Switch the device off and on again
I131	Maintenance activity in remote or via App in progress	Wait for the activity to finish
I998	Cycle failed	Confirm reset and wait for the machine to release pressure
I999	Current cycle stop confirmation request	Confirm whether or not to stop the cycle

17. USER PIN RESET

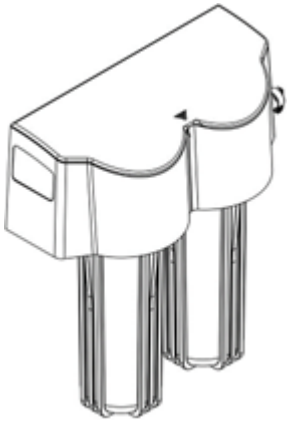
If the user enters the pin incorrectly for 3 times, it is necessary to enter the following unlock pin for four consecutive times when you will be prompted to enter pin again:

9999

18. APPENDIX – ADDITIONAL COMPONENTS

Only use spare parts and additional components that meet the manufacturer's specifications.

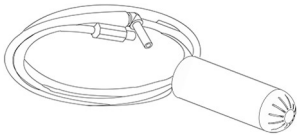
DEMINERALISER PURE 100



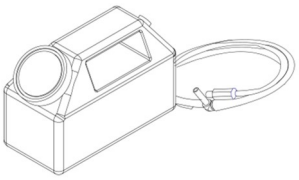
DEMINERALISER PURE 500
TWIN PURE 500

The above mentioned additional components are not available for S versions.

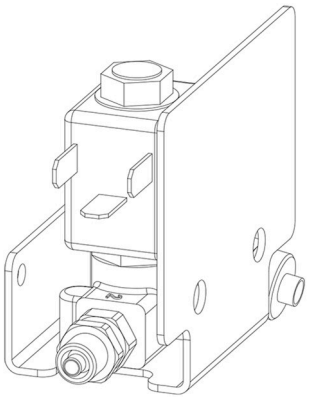
EXTERNAL PUMP KIT



FRONT FILLING

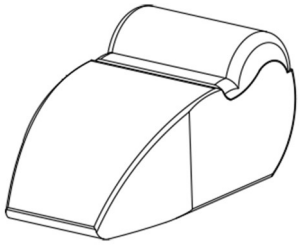


H_2O AUXILIARY SOLENOID VALVE
Additional SV kit including:
- 2-way water solenoid valve, NC - 24 V DC
- Steel support and fastening screws
- Connection cable with plug
- Silicone hose with connector
- Control valve
- 1-way valve

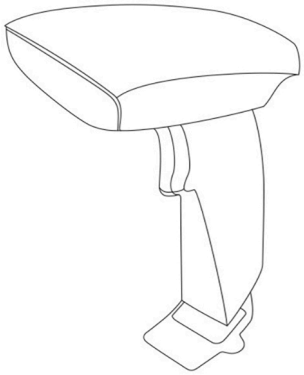


For the management of the additional components for automatic filling, refer to the manual of the additional component.

EXTERNAL PRINTER



BARCODE READER



MY TRACE SOFTWARE

19. PRINTER CONNECTION

Connect the printer to the RS232 serial port located on the rear of the autoclave.

Load the desired type of paper and turn on the printer.
Set the type of label (see the paragraph PRINTERS).

Refer to the printer manual for printer starting and paper loading.

20. APPENDIX - SPARE PARTS AND ADDITIONAL COMPONENTS

Only use spare parts and additional components that meet the manufacturer's specifications.

Description	Code
bacteriological filter	97290160
door gasket (17/22 l)	97400258
door gasket (28 l only)	97467471
demineralised water tank/chamber filter	97290210

21. APPENDIX - TECHNICAL SERVICE

FOR ANY REQUEST FOR TECHNICAL INTERVENTION ON THE PRODUCT,
BOTH UNDER WARRANTY AND OUT OF WARRANTY, DIRECTLY CONTACT
THE DEALER OR RESELLER THAT SUPPLIED THE PRODUCT.

We will gladly provide any information you may need on the product as well as give you suggestions and advice on the water steam sterilization procedures.

In this regard, please refer to the following address:

Cefla s.c.
Plant
Via Bicocca, 14/C
40026 - Imola (BO) IT
Tel. +39 0542 653441 Fax. +39 0542 653555

Headquarters
Via Selice Provinciale 23/A – 40026 Imola (BO) IT

22. APPENDIX - WARNINGS AND LOCAL REGULATIONS

Please consult the Web site of the manufacturer to find a list of authorised representatives.

Before carrying out any technical service operations, consult the service manual containing the above instructions.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Making Your Life Better.