CASTELLINI

C-17T C-22T

OPERATOR'S MANUAL

REVISIONS

The following table lists subsequent editions/revisions of the manual.
The “Description” field brief explains the subject of the latest revision.

CODE	REV.	DATE	DESCRIPTION
97050787	00	03-2015	First issue (translation from the original in Italian)

CONTENTS

FOREWORD

Dear Customer

Thank you for choosing this product.We hope that you will find it completely satisfactory. This manual describes all procedures for the correct use of the device and instructions for deriving the full benefit from its features. In any case, we will be available to provide explanations and to receive any suggestions you may have for improving our products or services.

SYMBOLS USED

NOTE

PAY PARTICULAR ATTENTION TO THE PARAGRAPHS MARKED WITH THE SYMBOL SHOWN.

WARNING

POTENTIAL DANGER TO PROPERTY. FOLLOW THE INSTRUCTIONS IN THE MANUAL TO PREVENT POTENTIAL DAMAGE TO MATERIALS, EQUIPMENT AND/OR OTHER PROPERTY.

HAZARD

THIS SYMBOL INDICATES A POTENTIAL DANGER TO PERSONS. FOLLOW THE PROCEDURES DESCRIBED IN THE MANUAL IN ORDER TO AVOID INJURING THE USER AND/OR OTHERS.

HAZARD

THIS SYMBOL INDICATES A POTENTIAL DANGER DUE TO HIGH TEMPERATURE.

THE MATERIAL THE DEVICE IS COMPOSED OF MUST BE DISPOSED OF ACCORDING TO THE DIRECTIVE 2002/96/EC.

SYMBOLS ON THE EQUIPMENT

	Potential hazard due to high temperature.
	Equipment in accordance with applicable directives.
	Symbol for disposal in accordance with Directives 2002/95/EC, 2002/96/EC, and 2003/108/EC.
	Consult the user manual.

RELEVANT EUROPEAN DIRECTIVES

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 **in accordance** with the following **European Directives as applicable**:

2006/95/EC,	for the approximation of the laws of the Member States relating to low voltage equipment.
2004/108/EC,	for the approximation of the laws of the Member States relating to the electromagnetic compatibility.
93/42/EEC,	and subsequent changes, concerning medical devices.
2011/65/EU,	(Rohs 2) on restriction of hazardous substances in electrical and electronic equipment.

INTENDED USE

The product described in this manual is intended exclusively for sterilization of reusable surgical instruments and materials.

DEVICE INTENDED FOR PROFESSIONAL USE AND NOT FOR SALE TO THE GENERAL PUBLIC.

WARNING

THE DEVICE MUST ONLY BE USED BY QUALIFIED PERSONNEL. IT MAY NOT BE USED OR HANDLED BY INEXPERT AND/OR UNAUTHORIZED PERSONNEL FOR ANY REASON.
THIS DEVICE MUST NOT BE USED FOR THE STERILIZATION OF FLUIDS, LIQUIDS OR PHARMACEUTICAL PRODUCTS.

IMPORTANT NOTES

NOTE

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.
THIS DOCUMENT MAY NOT BE REPRODUCED, ADAPTED OR TRANSLATED, IN PART OR IN FULL, WITHOUT THE PRIOR WRITTEN PERMISSION OF THE MANUFACTURER.

PURPOSE OF THE MANUAL

The purpose of this manual is to provide instructions for:
- becoming generally familiar with the product;
- its correct installation and configuration;
- its safe, efficient use;
- handling materials before and after sterilization.

Its appendixs also provide:
- the product's general technical specifications;
- sterilization program specifications;
- maintenance;
- troubleshooting;
- a variety of other documentation.

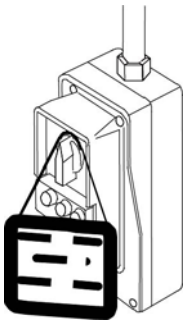
GENERAL WARNINGS

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

WARNING

THE USER IS RESPONSIBLE FOR ALL LEGAL REQUIREMENTS RELATED TO THE INSTALLATION AND USE OF THIS PRODUCT. THE MANUFACTU-RER WILL NOT BE RESPONSIBLE FOR ANY BREAKAGE, MALFUNCTIONS, PROPERTY DAMAGE OR INJURY IN THE EVENT THAT THE PRODUCT IS NOT INSTALLED OR USED CORRECTLY.

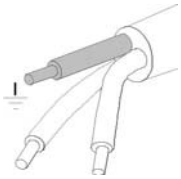
Please observe the following precautions in order to avoid injury or property damage:



- Use **ONLY high-quality demineralised and/or distilled water**.

WARNING

THE USE OF WATER OF INADEQUATE QUALITY CAN SEVERELY DAMAGE THE DEVICE.
SEE APPENDIX TECHNICAL CHARACTERISTICS IN THIS REGARD.



- **Do not** pour water or other liquids on the device;
- **Do not** pour inflammable substances on the device;
- **Do not** se the device in the presence of gas or explosive or inflammable vapors;
- Before performing any maintenance or cleaning, **ALWAYS DISCONNECT** the electricity.

DANGER

WHENEVER IT IS NOT POSSIBLE TO DISCONNECT THE ELECTRICITY TO THE DEVICE, OR IF THE EXTERNAL POWER GRID SWITCH IS FAR AWAY OR, AT ANY RATE, NOT VISIBLE TO THE MAINTAINER, PLACE A WORK IN PROGRESS SIGN ON THE EXTERNAL POWER GRID SWITCH AFTER TURNING IT OFF.

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

WARNING

THE FAILURE TO OBSERVE THE ABOVE, RELEASES THE MANUFACTURER FROM ALL LIABILITY.

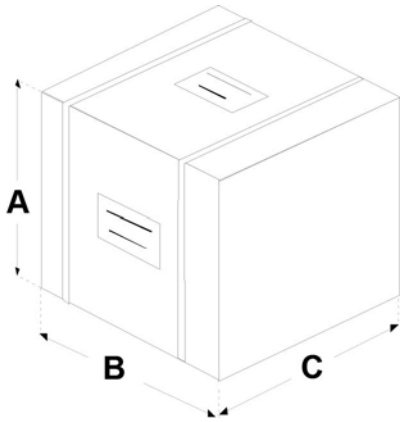
PACKAGE CONTENT

NOTE

CHECK THE INTEGRITY OF THE PACKAGE UPON RECEIPT.

DIMENSION AND WEIGHT

Once the package is opened, check that:
- the supply matches the specifications of the order (see the accompanying document);
- that there is no obvious product damage;

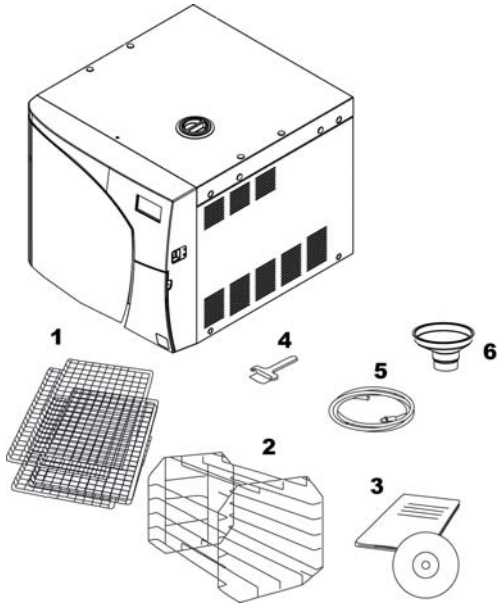


Dimensions and weight	17 lt	22 lt
A. Height	600 mm	600 mm
B. Width	580 mm	580 mm
C. Depth	700 mm	800 mm
Total weight	62 kg	68 kg

NOTE

IN THE CASE OF A WRONG PRODUCT, MISSING PARTS OR ANY TYPE OF DAMAGE, IMMEDIATELY PROVIDE A DETAILED DESCRIPTION TO THE DISTRIBUTOR AND THE TRANSPORTER THAT MADE THE DELIVERY.

DESCRIPTION OF THE CONTENT



In addition to the steriliser, the package contains:
1. No. 3 stainless steel wire instrument tray;
2. Stainless steel wire tray support;
3. Printed Quick Operation Guide with included User Guide on CD-ROM;
4. Tray extractor;
5. Plastic tube for direct water drainage with fastening clamp;
6. Water filling funnel.

PRODUCT HANDLING

Where possible, the packaged product must be handled using suitable mechanical means (forklift truck, transpallet, etc.) and following the instructions shown on the package. In the case of manual handling, the product must be lifted by two persons using the handles cut in the side of the box.Once the sterilizer has been taken out of the box, it must be lifted by two persons using appropriate means.

WARNING

WE RECOMMEND THAT THE DEVICE BE TRANSPORTED AND STORED AT A TEMPERATURE NO LOWER THAN 5 °C. PROLONGED EXPOSURE TO LOW TEMPERATURE AN DAMAGE THE PRODUCT.

NOTE

KEEP THE ORIGINAL PACKAGING AND USE IT WHENEVER THE DEVICE IS TO BE TRANSPORTED. THE USE OF DIFFERENT PACKAGING COULD DAMAGE THE PRODUCT DURING SHIPMENT.

DANGER

BEFORE TRANSPORT, LEAVE THE DEVICE TURNED-OFF FOR ABOUT 30 MINUTES AFTER THE LAST PROGRAM FINISHES AND DRAIN THE DISTIL-LED WATER AND USED WATER TANKS SO THAT THE ALL THE HOT INTERNAL PARTS WILL HAVE TIME TO COOL.

PRODUCT PRESENTATION

The C-17T / C-22T series sterilisers are a revolutionary product in the field of water steam sterilisers, equipped with type B (EN 13060) cycles, as well as the new point of reference with respect to safety, performance, flexibility and ease of use. It is a sophisticated but, at the same time, easy to use device that, thanks to its wide range of configuration options and patented operating devices, satisfies every need for sterilizing medical devices, guaranteeing the maximum performance under all conditions. It also features a better way of relating to users who, rather than having to adapt to the machine and its characteristics, are able to "converse" with it and configure it to meet their own needs. Thanks to its remarkable ease of use, compact size and pleasant appearance, it is the ideal partner for all professionals who demand the maximum sterilization safety.

GENERAL CHARACTERISTICS

A C-17T / C-22T series steriliser is an electronic water steam steriliser that is entirely operated by a micro-processor with a large, printed stainless steel sterilisation 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.

Its exclusive steam generation system, effective plumbing circuit and electronic management (supplemented by high-precision sensors) guarantees high process execution speeds and excellent thermodynamic parameter stability. Moreover, its Process Evaluation System constantly monitors all the machine's “vital” parameters in real-time, guaranteeing absolute safety and a perfect result.

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

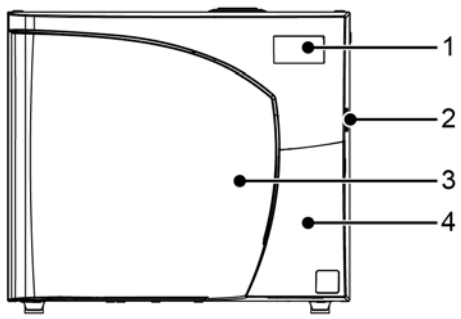
Please refer to the chapter, “**Configuration**” for more detail.

The new range of autoclaves C-17T / C-22T have the most complete, sophisticated and advanced safety systems available today, giving the user a peace of mind against any electrical, mechanical, thermal or functional fault.

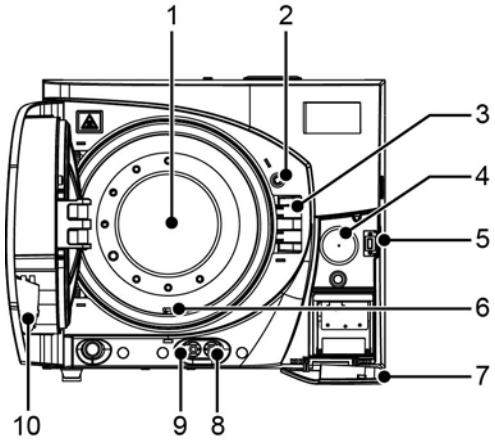
NOTE

FOR THE DESCRIPTION OF THE SAFETY DEVICES, REFER TO THE APPENDIX TECHNICAL CHARACTERISTICS.

FRONT

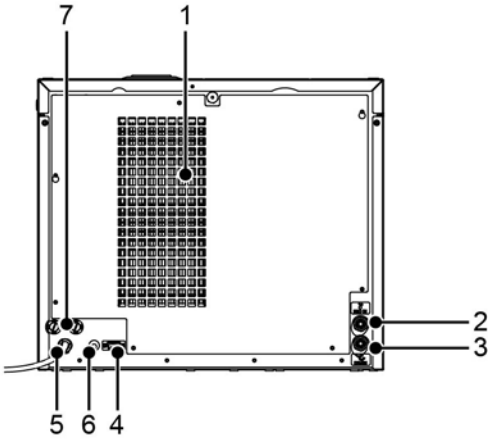


1. LCD display and control panel
2. On/Off switch
3. Door
4. Door



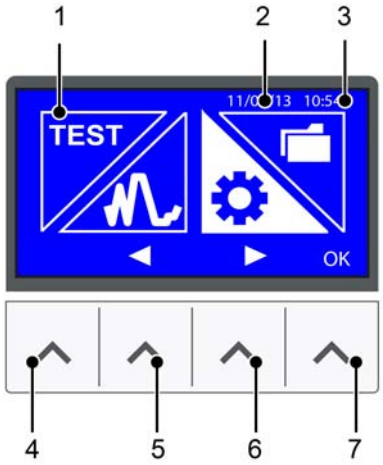
1. Sterilization chamber
2. Door microswitch
3. Door closing system
4. Bacteriological filter
5. USB port
6. Water drain filter
7. Door
8. Distilled water tank drain quick-coupling (SERVICE ONLY)
9. Used water drain quick connector
10. Door

REAR



1. Heat exchanger
2. Connection for automatic distil-led water filling
3. Connection for Direct water drainage
4. Serial cable connection
5. Power cable connection
6. Automatic filling electrical connection
7. Mains fuses

LCD ICONS



1. SELECTION ICONS
2. DATE
3. TIME
4. DOOR OPENING
5. BACKWARD BUTTON
6. FORWARD BUTTON
7. CONFIRMATION BUTTON

	Selection of the sterilizer settings (SETUP)
	Selection for data management
	Sterilization cycle selection
TEST	Selection of the test cycles

NOTE

OTHER PARTICULAR SYMBOLS RELATING TO THE VARIOUS CONDITIONS OF USE WILL BE DESCRIBED IN THE RELATIVE PARAGRAPHS.

EXAMPLE OF WORKING CYCLE

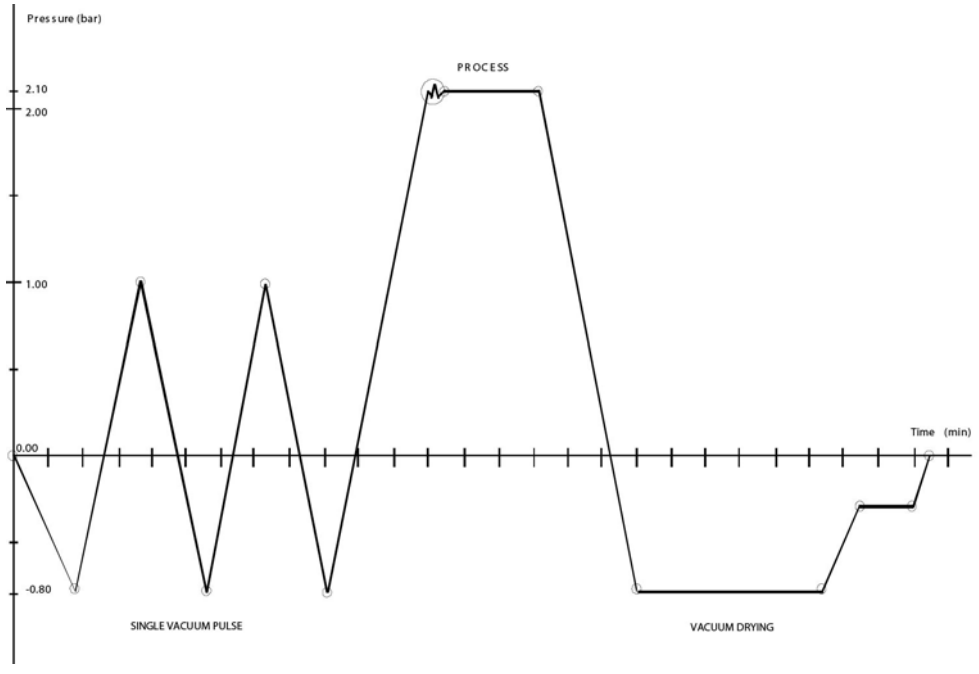
The C-17T / C-22T series sterilisation programme can be effectively described as a succession of phases, each one with a very precise objective.

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 the material by steam 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.



NOTE

PLEASE REFER TO APPENDIX PROGRAMS FOR MORE DETAIL.

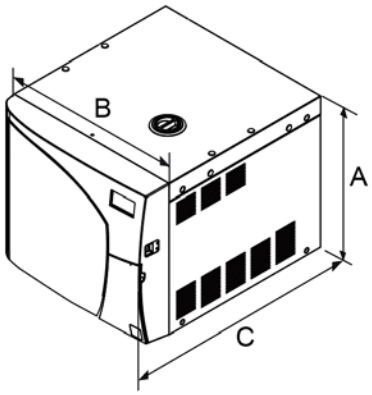
SETTING UP THE DEVICE

FOREWORD

The first and fundamental step in achieving good sterilizer operation, long life and complete use of its features is a correct, careful installation. Moreover, this precaution will avoid the danger of physical injury or property and damage, not to mention malfunctions and damage to the machine.
So, please follow the instructions in this chapter **precisely.**

NOTE

CUSTOMER SUPPORT (SEE APPENDIX) WILL ANSWER YOUR QUESTIONS AND PROVIDE ADDITIONAL INFORMATION.
THE STERILIZER HAS PASSED ALL REQUIRED INSPECTIONS BEFORE BEING PLACED ON THE MARKET. IT DOES NOT REQUIRE ANY ADDITIONAL CALIBRATION BEFORE BEING PLACED IN SERVICE.



Dimensions and weight	17 lt	22 lt
A. Height (total)	420 mm	420 mm
B. Width (total)	480 mm	480 mm
C. Depth (excluding rear connections)	560 mm	660 mm
Total weight	58 kg	63 kg

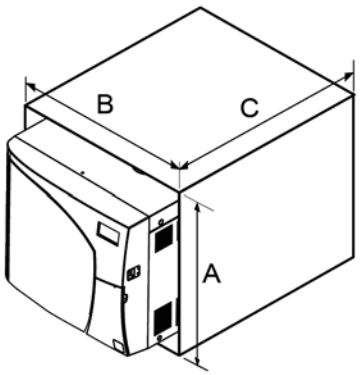
ELECTRICITY

The electrical system to which the sterilizer will be connected must be suitably dimensioned based on the electrical characteristics of the device. This information is shown on the **back of the machine.**

COMPARTMENT DIMENSIONS FOR BUILT-IN INSTALLATIONS

When installing the sterilizer inside a cabinet, you must provide adequate space all around the device to provide effective ventilation as well as **enough opening in the back** that, in addition to allowing the passage of the power cord will also provide **an adequate air flow** and the consequent **optimum cooling** of the heat exchanger.

The compartment where the steriliser will be kept must have the following **minimum dimensions:**



Dimensions	17 lt	22 lt
A. Height	500 mm	500 mm
B. Width	600 mm	600 mm
C. Depth	600 mm	700 mm

WARNING

COMPARTMENT DIMENSIONS LESS 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.

NOTE

IF THE FILLING AND DRAINAGE DOORS ARE NOT ACCESSIBLE FROM THE TOP AFTER THE DEVICE HAS BEEN BUILT IN, IT IS ADVISABLE TO USE THE FRONT ATTACHMENTS (FRONT FILLING KIT).
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 OR ANY OTHER EXTERNAL PART. WHEN INSTALLED IN THE COMPARTMENT, THE DEVICE MUST BE COM-PLETE WITH ALL ITS PARTS.
PLEASE REFER TO APPENDIX TECHNICAL CHARACTERISTICS FOR COMPLETE TECHNICAL DATA.

GENERAL PRECAUTIONS FOR INSTALLATION

Obey the following warnings for the correct operation of the device and/or to avoid **risky situations**:

- Install the sterilizer on a flat and perfectly horizontal surface.
- Make sure that the support surface is strong enough to support the equipment weight (about 60 kg).
- Leave adequate space for ventilation (at least 10 cm on each side) all around the sterilizer, especially in back.
- If the device is built-in to a cabinet, be sure to respect the warnings in the preceding paragraph, avoiding an obstructions to the air intake.
- Do not install the sterilizer near tubs, sinks or similar places, to avoid contact with water or liquids. This could cause short circuits and/or potentially dangerous situations for the operator.
- Do not install the sterilizer in a place that is excessively humid or poorly ventilated.
- Do not install the machine were there is **gas** or inflammable and/or explosive **vapors**.
- Install the device so that the power cord is not bent or crushed.
  It must run freely all the way to the socket.
- Install the device that any external fill/drain tubing is not bent or crushed. They must run freely to the drain tank.

ELECTRICAL CONNECTIONS

The sterilizer's must be connected to a socket of the electrical system of adequate capacity for the device's absorption and ground provided, in conformity with current laws and/or standards. The socket must be suitably protected by a breaker having the following characteristics:

- Nominal current I_n **16 A**
- Differential current I_{Dn} **0,03 A**

WARNING

THE MANUFACTURER WILL NOT BE LIABLE FOR DAMAGES CAUSED BY INSTALLING THE STERILIZER ON AN INADEQUATE ELECTRICAL SYSTEM AND/OR NOT EQUIPPED WITH A GROUND.

NOTE

ALWAYS CONNECT THE POWER CORD DIRECTLY TO THE SOCKET. DO NOT USE EXTENSION CORDS, ADAPTERS OR OTHER ACCESSORIES.

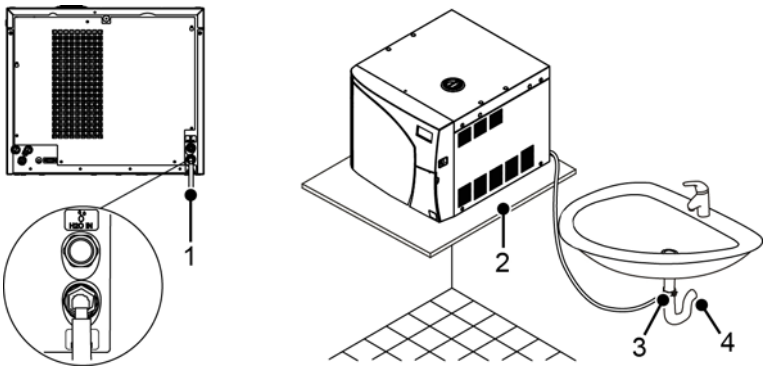
DIRECT CONNECTION TO A CENTRALIZED DRAINING POINT

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

NOTE

MAKE SURE THE TUBE IS NOT BENT, CRUSHED OR OBSTRUCTED IN ANY WAY.

The following diagram provides an indicative arrangement of the components:



1. To the centralized draining point
2. Support plane
3. Clamp
4. Drain siphon

NOTE

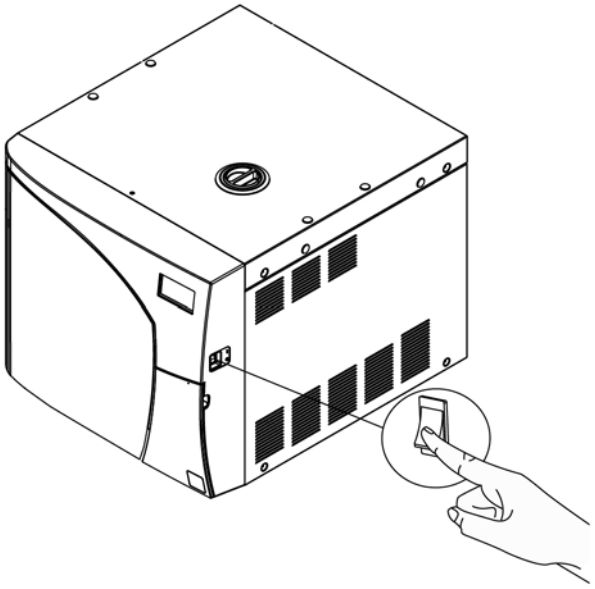
THE CONNECTION POINT TO THE CENTRAL DRAIN MUST BE LOWER THAN THE STERILIZER'S SUPPORT SURFACE.
OTHERWISE, THE TANK MAY NOT EMPTY CORRECTLY.

NOTE

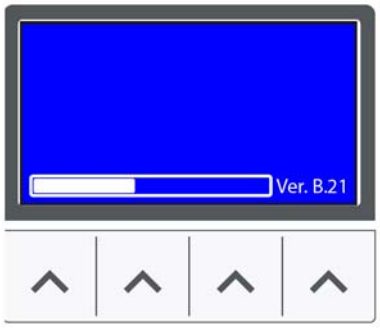
FOR AUTOMATIC FILLING SYSTEMS (PUMP, EV AUX) THE DIRECT DRAIN MUST ALWAY S BE CONNECTED.
THIS ACTS AS AN OVERFLOW, AND, IF FOR SOME REASON, THE FILLING SYSTEM DOES NOT STOP, THE WATER SEEPS FROM THE FEED TANKINTO THE DRAIN TANK AND FLOWS OUT THE DIRECT DRAIN, THUS PRE-VENTING FLOODING.

FIRST START-UP
STARTING

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

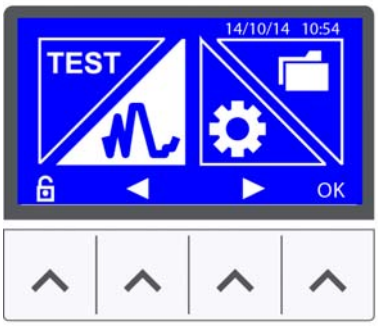


When the sterilizer is turned on, the following page appears:



MAIN MENU

Once the start procedure has been completed, the main menu shown below appears on the display.



The device waits for selection of the desired program (see section “Program Selection”)

DANGER

O PREVENT BURNS, BE CAREFUL NOT TO TOUCH THE STERILIZATION CHAMBER, THE CHAMBER EQUIPMENT OR THE INSIDE OF THE DOOR WITH BARE HANDS.

FILLING DISTILLED WATER

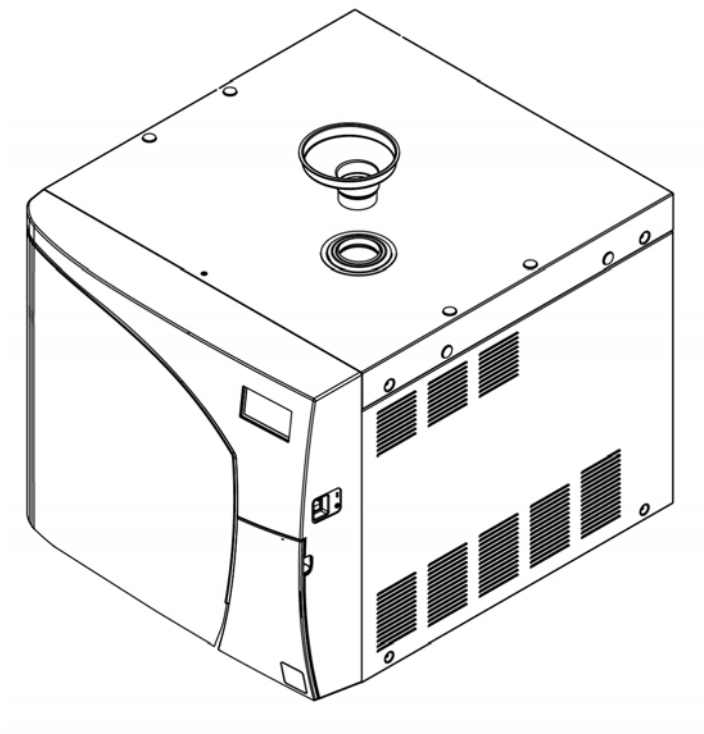
MANUAL FILLING

The distilled water tank must be filled or topped up when using the sterilizer for the first time, and when the water MIN level icon comes on .
Operate as follows (with the machine on) referring to the figure:

1. Remove the rubber cap.
2. Insert the filling funnel provided in the fillercap.
3. Slowly pour the distilled water into the funnel until the MIN icon goes off.
4. Continue filling with water until reaching the maximum level in the filling tank, indicated by the MAX icon coming on, accompanied by an acoustic warning.
   Immediately stop filling; under no circumstances exceed the MAX limit indicated at the bottom of the fillercap.
   Be careful not to spill any water on the machine; if so, immediately dry it off.
5. Remove the funnel from the fillercap.
6. Refit the rubber cap.

NOTE

THE MAX LEVEL ICON DOES NOT NEED TO BE ON FOR THE STERILIZATION PROGRAM TO BE STARTED. SIMPLY MAKE SURE THAT THE MIN LEVEL ICON OFF.



AUTOMATIC FILLING

Refer to the Appendix "ACCESSORIES".

CONFIGURATION

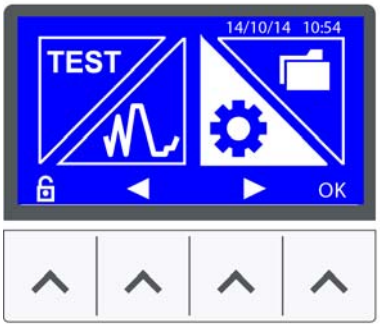
The C-17T / C-22T series offers a wide range of customisation options. The user can thus configure the device according to need, adapting the performance based on, for example, the type of activity carried out, the type of material to be sterilized and the frequency of use. Using the configuration program, the user can set a series of options available in user-friendly menus.

NOTE

USE THE SETUP PROGRAM WHENEVER NECESSARY. A CORRECTLY PER-SONALIZED DEVICE PROVIDES THE BEST PERFORMANCE AND THE MOST SATISFACTORY USE.
CUSTOMER SUPPORT (SEE APPENDIX) IS AVAILABLE TO HELP USERS BY PROVIDING SUGGESTIONS OR ADVICE ON THE BEST WAY TO USES THE OPTIONS IN THE SETUP PROGRAM.

SETTINGS

To access the configuration program, select the icon below and press OK.



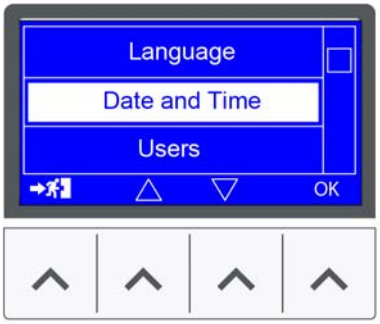
LANGUAGE

Select the DATE AND TIME option and confirm by pressing the OK button.

Select the desired language by scrolling the list with the arrows (Δ and ∇) and confirm by pressing the OK button

DATE AND TIME

Select the DATE AND TIME option and confirm by pressing the OK button.

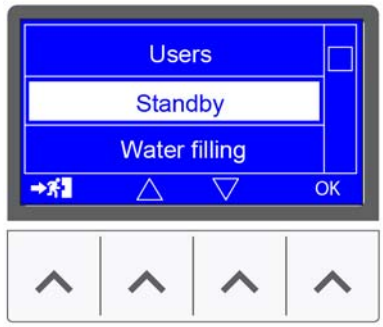


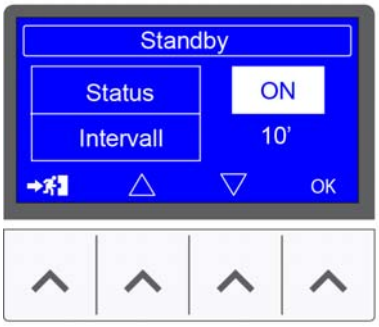
Select the field to be modified using the arrows and confirm with OK.

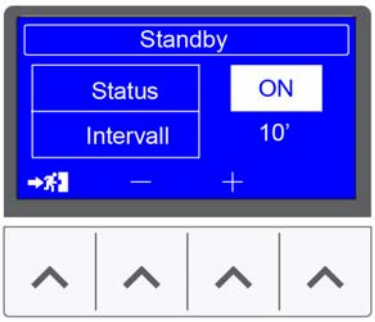
Act on the + and – buttons to change the value.
Confirm with OK and continue with modifying the other fields.
Press the EXIT icon to save the selections made and go back to the previous menu.

STAND BY

Select the STANDBY option and confirm by pressing the OK button.



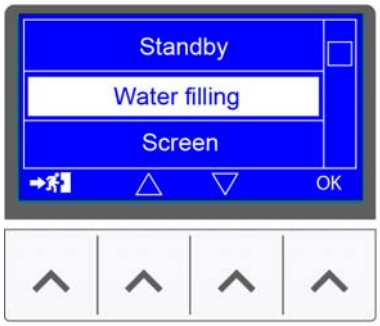


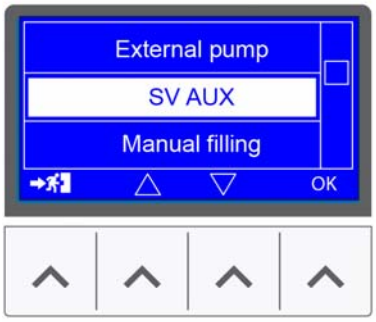


Select ON to activate heating in STANDBY or OFF to deactivate it. Confirm by pressing OK.

WATER FILLING

Select the WATER FILLING option and confirm by pressing the OK button.





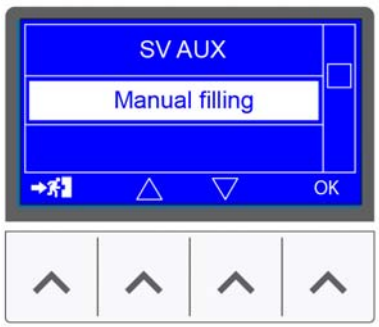
Select the desired option based on the accessory actually connected and confirm with OK.

NOTE

WHEN THE AUTOMATIC FILLING SYSTEM IS CONNECTED, THE STERILIZER ASKS YOU TO IDENTIFY THE TYPE OF DEVICE ACTUALLY CONNECTED BY PRESSING THE CORRESPONDING BUTTON. IF THE FILLING SYSTEM IS CONNECTED WHEN THE STERILIZER IS OFF, ACCESS THE MENU VIA THE CONFIGURATION PROGRAM AND MANUALLY SELECT THE CORRECT OPTION.

NOTE

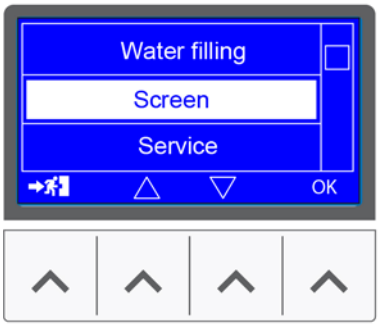
THIS MENU CAN ALSO BE USED TO TEMPORARILY DEACTIVATE THE AU-TOMATIC FILLING SYSTEM (FILTERS EXHAUSTED, FAULTY, ETC.) AND GO TO MANUAL TANK FILLING.

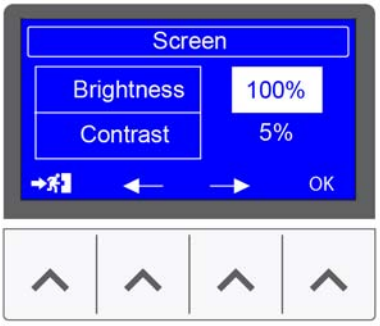


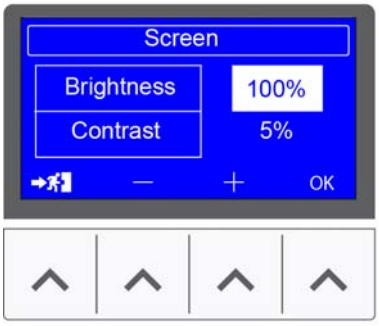
Select "Manual filling" and confirm with OK.

SCREEN

Select the SCREEN option to adjust the screen brightness and contrast and confirm with OK.



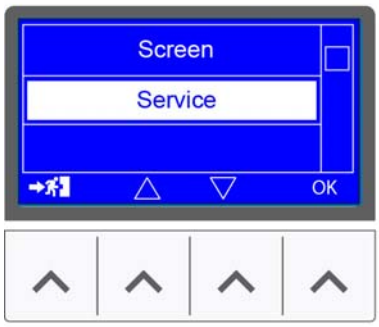




Select the field to be modified using the arrows and confirm with OK.
Act on the + and – buttons to change the value.
Confirm with OK and continue with modifying the other fields.

SERVICE

This menu is reserved for Technical Service. It may only be used by an authorised technician.



PREPARATION OF THE MATERIAL FOREWORD

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 adequate thickness.
- 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.).

NOTE

IN ADDITION TO CAUSING PROBLEMS DURING STERILIZATION, THE FAILURE TO CLEAN AND REMOVE RESIDUE CAN DAMAGE THE INSTRUMENTS AND/OR THE STERILIZER, ITSELF.

TREATING THE MATERIAL BEFORE STERILIZATION

An effective **cleaning**, consists of the following:

1. Rinse the instruments under running water, immediately after use;
2. Separate metal instruments by type of material (carbon steel, stainless steel, brass, aluminum, chromium, etc.), to avoid electrolytic oxidation-reduction;
3. Clean the instrument with an ultrasound device containing a mixture of water and germicide solution carefully following the manufacturer's recommendations, or use a heat disinfector;
4. For best results, use a detergent specif cally designed for ultrasound washing, with a neutral pH.

NOTE

SOLUTIONS CONTAINING PHENOLS OR QUATERNARY AMMONIA COMPOUNDS CAN CAUSE CORROSION ON INSTRUMENTS AND THE METAL PARTS OF ULTRASOUND DEVICES.

5. After washing, carefully rinse the instruments and make sure that residues have been completely eliminated; if necessary, repeat the washing cycle or clean manually.

NOTE

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 **hollow instruments** (turbines, contra-angles, etc.), supplement the above with treatment in suitable dedicated devices that provide effective internal cleaning (occasionally including lubrication).

NOTE

THE END OF THE STERILIZATION PROGRAM, REMEMBER TO LUBRICATE THE INTERNAL HANDPIECE MECHANISMS USING SPECIAL STERILE OIL. BY TAKING THESE PRECAUTIONS, THE INSTRUMENTS LIFE TIME WILL NOT BE REDUCED IN ANY WAY

WARNING

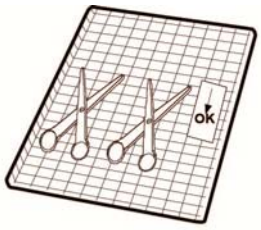
CONSULT THE INSTRUCTIONS PROVIDED BY THE MANUFACTURER OF THE INSTRUMENT/MATERIAL TO BE STERILIZED BEFORE SUBJECTING IT TO AUTOCLAVE TREATMENT, CHECKING FOR ANY INCOMPATIBILITIES. EXACTLY FOLLOW THE METHODS OF USING DETERGENTS OR DISINFECTANTS AND THE USAGE INSTRUCTIONS OF THE AUTOMATIC DEVICES FOR WASHING AND/OR LUBRICATING THEM.

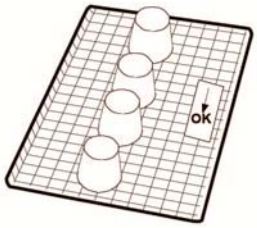
As regards **textile material** (or porous, in general), such as smocks, napkins, caps and other, carefully wash, and then dry, them before treating them in the autoclave.

NOTE

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.

ARRANGING THE LOAD





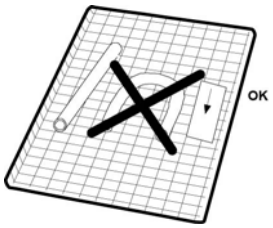
Follow the instructions below for the most efficient sterilization process, preserve the material and increase its life time.

General notes for positioning on trays:

- Arrange instruments made of different metals (stainless steel, tempered steel, aluminum, etc.) on different trays or well separated rom each other.
- In the case of instruments **not** made of stainless steel, place a paper sterilization napkin or a muslin cloth between the tray and the tool, avoiding direct contact between the two different materials.
- In any case, arrange the objects sufficiently distant from each otherhat they will remain so for the entire 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 or gauze cloth to isolate and protect them.
- Arrange recipients (glasses, cups, test tubes, etc.) resting on their side, or upended, so avoid pooling water.
- **Do not load trays beyond their indicated limit (see *Appendix A*).**
- *Since this value is understood to be the maximum allowed limit, it can be excessive, in some cases, so always use **common sense.***
- **Do not** stack trays **or** put them in direct contact with the walls of the sterilization chamber.
- **Always** use the tray support provided.
- To insert and extract trays from the sterilization chamber, **always** use the extractor provided.

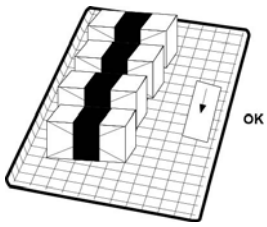
NOTE

PLACE A CHEMICAL STERILIZATION INDICATOR ON EVERY TRAY TO INDICATE THAT THE PROCESS HAS OCCURRED: THIS AVOIDS USELESSLY REPROCESSING THE SAME LOAD OR, WORSE, USING NON-STERILIZED MATERIAL.. IF PROCESSING WRAPPED MATERIAL, PLACE THE INDICATOR INSIDE ONE OF THE WRAPPINGS.



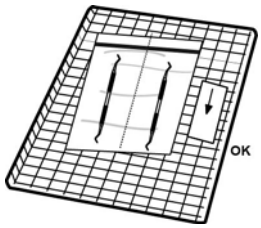
Notes for rubber and plastic tubing

- Always rinse before use with pyrogen-free water; do not dry them.
- Arrange the tubing on the tray so that their ends are not obstructed or crushed.
- Do not bend or wind them, but allow them to lie as straight as possible.



Notes for packets and packages

- Arrange packages side-by-side, suitably spaced and absolutely **not** piled, to avoid their coming in contact with the walls of the chamber.
- Whenever it is necessary to wrap particular objects, always use suitably porous material (sterilization paper, muslin napkins, etc.), closing the wrapping with autoclave adhesive tape.



Notes for wrapped material

- Wrap instruments individually or, when more than one instrument are placed in the same wrapping, make sure that they are made of the same metal.
- Seal the wrapping with adhesive tape for autoclaves or heat-sealing machines.
- Do not use staples, pins or other fasteners since they can compromise the maintenance of sterility.
- Arrange the envelopes so as to avoid forming air pockets that obstruct the correct penetration and removal of the steam.
- Orient the envelopes so as to leave the plastic side up and the paper side down (tray side).
- In any case, check that they are correctly positioned, turning them over, if necessary.
- Never superimpose envelopes on top of each other.

WARNING

WHENEVER YOU ANTICIPATE PROLONGED STORAGE, ALWAYS WRAP THE INSTRUMENTS.
SEE THE CHAPTER, “PRESERVING STERILIZED MA-TERIAL”.

Program selection is fundamental for a successful sterilization process.

Since each instrument, or material in general, has different shape, consistency and properties, it is important **identify the most suitable program for it**, both for preserving its physical characteristics (avoiding or, at any rate, limiting alterations) as well to guarantee the most effective sterilization.
A guide to selection of the program suited to the load is given in the **Appendix Programs.**

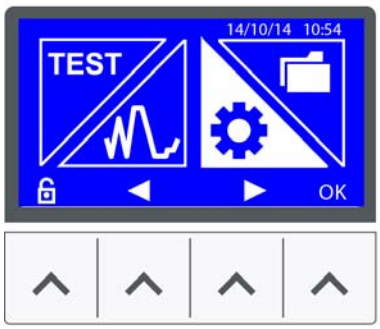
STERILIZATION CYCLES

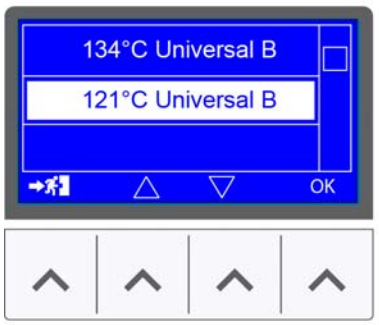
A sterilization cycle consists of a determined number of phases. The number and duration of the phases can differ for the programs, based on the type of air extraction, sterilization process and drying method.

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 perfect sterilization under any conditions.

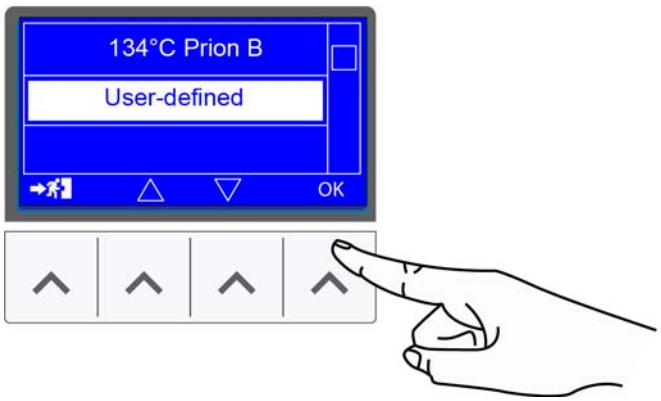
After inserting the load in the sterilization chamber (taking the precautions described in the section **"Preparing the material to be sterilized"**) select the desired sterilization cycle as follows:





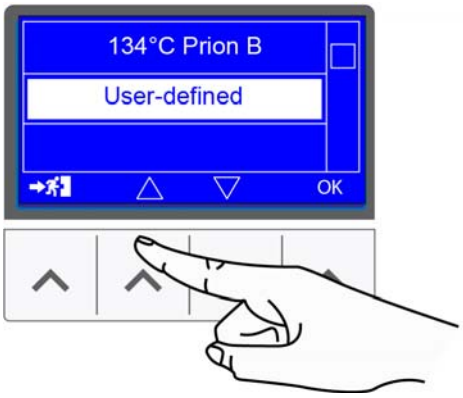
USER-DEFINED CYCLETE

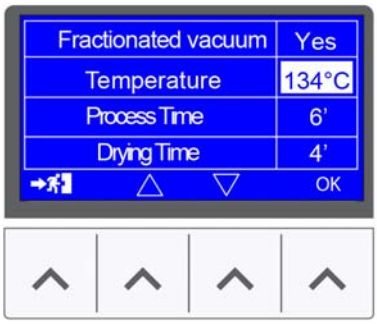
To set the parameters, select the following option and confirm.

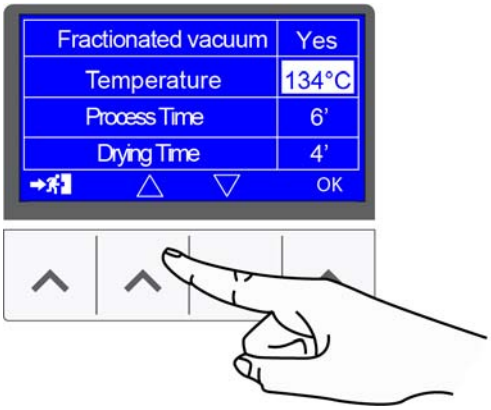


Select the field to be set using the arrows and confirm with OK.
Act on the + and – buttons to change the value.

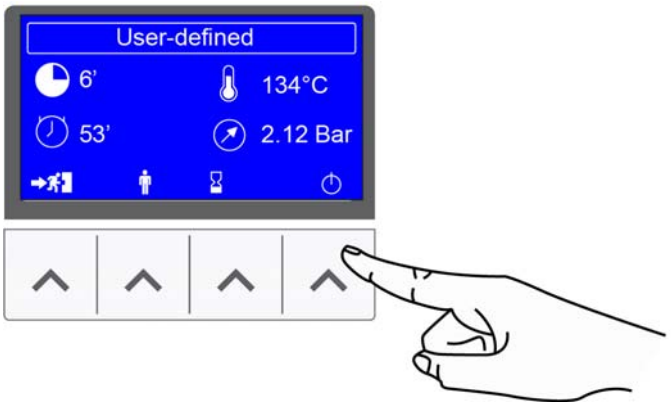
Confirm with OK and continue with modifying the other fIelds.







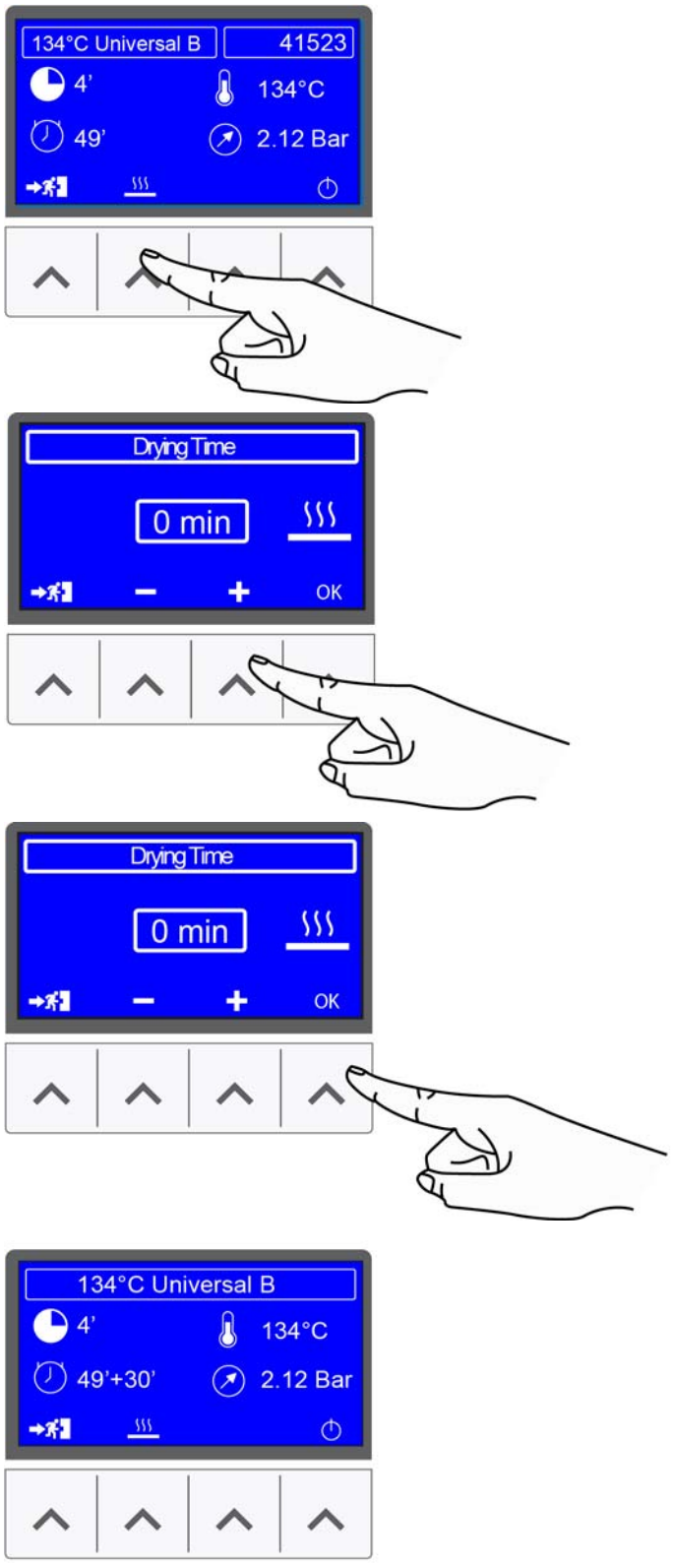
Press the EXIT button to save all the settings and go back to the previous page.



Press to start the user-defined cycle.

EXTRA DRYING

Select the EXTRA DRYING option by tapping the button indicated.
Act on the + and – buttons to set the time and confirm.
After confirmation, the extra drying time will appear next to the total cycle time.
The extra time stays in memory. To activate the extra drying function, press the OK button.

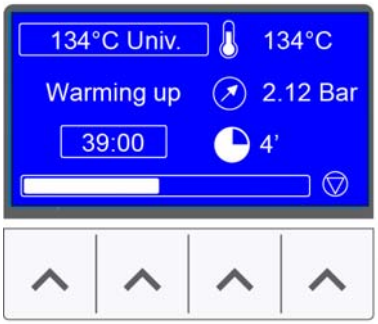


EXECUTION OF THE CYCLE

Press the OK button to start the cycle with the active options selected.

Taking as example the most complete and significant sterilization cycle, i.e. the **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

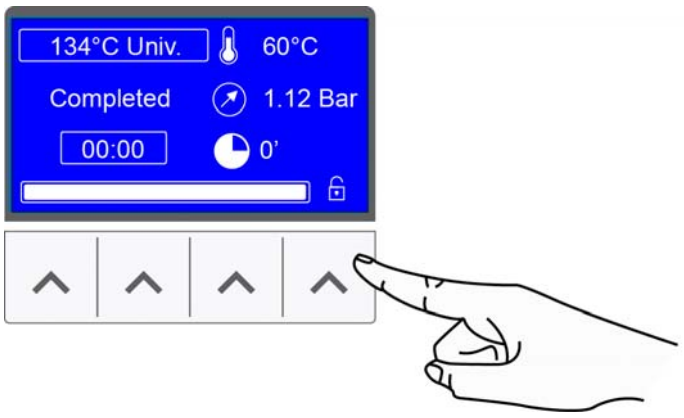
CYCLE COMPLETION

CYCLE OUTCOME

If the message "**COMPLETED**" appears it means that the cycle has completed correctly without any interruptions for alarms and that **complete asepsis** of the material is guaranteed.

DOOR OPENING AT THE END OF THE CYCLE

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



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 tray 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;
4 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.

Sterile material waiting for used 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** wrap the instruments after sterilization since, in addition to being useless and completely senseless, is also potentially damaging.
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 data (attaching 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 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.

NOTE

CONSULT THE SPECIFICATIONS PROVIDED BY THE MANUFACTURER OF THE PACKAGING MATERIAL RELATIVE TO THE MAXIMUM ALLOWED STORAGE TIME. IN THE ABSENCE OF APPROPRIATE INSTRUCTIONS, DO NOT EXCEED THE FOLLOWING STORAGE PERIODS
:

BASKET WITH SEALING RING OR CONTAINER WITHOUT GASKET	1-2 DAYS
CONTAINER WITH FILTER AND GASKET OR CONTAINER WITH VALVES.	30 DAYS
SINGLE-PLY “MEDICAL GRADE” PAPER	1-2 DAYS
DOUBLE-PLY “MEDICAL GRADE” PAPER (ORTHOGONAL)	30 DAYS
POLYESTER / POLYPROPYLENE PAPER COVERING, SINGLE	30 DAYS
POLYESTER / POLYPROYLENE PAPER COVERING, DOUBLE	60 DAYS

THE VALUES INDICATED REFER TO MATERIAL THAT HAS BEEN PROPERLY STORED.

NOTE

THOSE STORAGE PERIODS MIGHT VARY FROM COUNTRY TO COUNTRY, DEPEN-DING ON THE LOCAL LEGAL REQUIREMENTS.

TEST PROGRAMS

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

FOREWORD

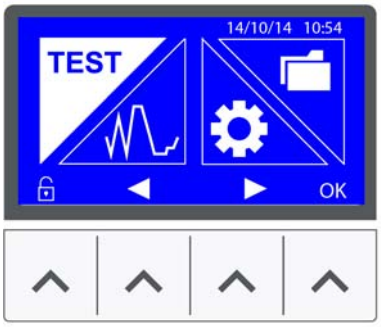
The C-17T / C-22T offer the possibility of easily and automatically executing two distinct test cycles:

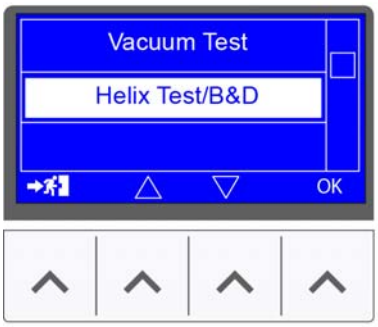
- **Helix/B&D Test**
- **Vacuum Test**

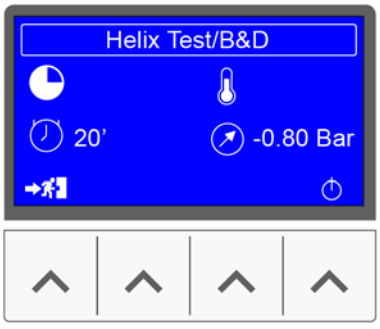
Helix/BD Test is a cycle run at 134°C characterised by a sterilization phase that lasts a specific time (3.5 minutes); the cycle comprises the fractionated vacuum phases similar to those used in the UNIVERSAL cycles.
Using an appropriate device, you can assess correct steam penetration into hollow loads.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

CYCLE HELIX TEST/B&D

To select the **Helix/B&D Test** cycle, select **Helix Test/B&D** using the arrows and confirm with OK.







The test device (in accordance with EN 867-5 specifications) consists of a 1.5m-long PTFE tube with an inside diameter of 2mm 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 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.

NOTE

THE TEST DEVICE AND THE CHEMICAL INDICATORS TO EXECUTE THE HELIX/BD TEST CYCLE ARE NOT PROVIDED WITH THE STERILIZER. FOR INFORMATION IN THIS REGARD, CONTACT CUSTOMER SERVICE (SEE APPENDIX).

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.

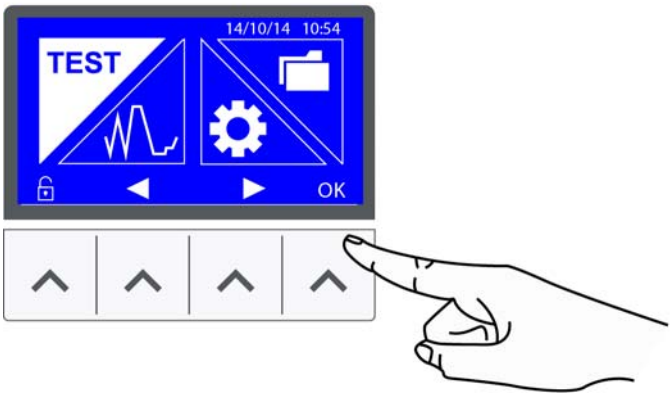
NOTE

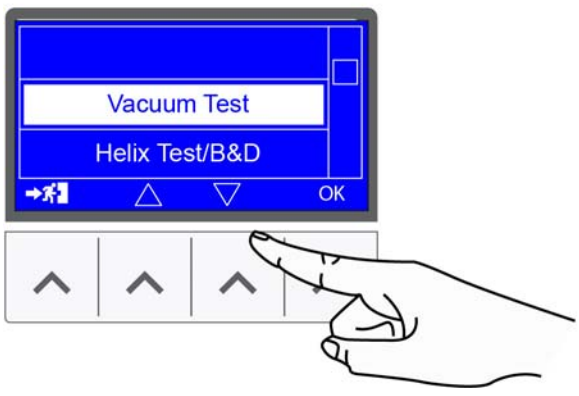
NORMALLY, THE COLOUR CHANGES FROM A LIGHT COLOUR (BEIGE, YELLOW, ETC.) TO A DARK COLOUR (BLUE, VIOLET OR BLACK). IN ANY EVENT, STRICTLY FOLLOW THE INSTRUCTIONS AND ANY ADDITIONAL TECHNICAL DETAILS PROVIDED BY THE INDICATOR MANUFACTURER.

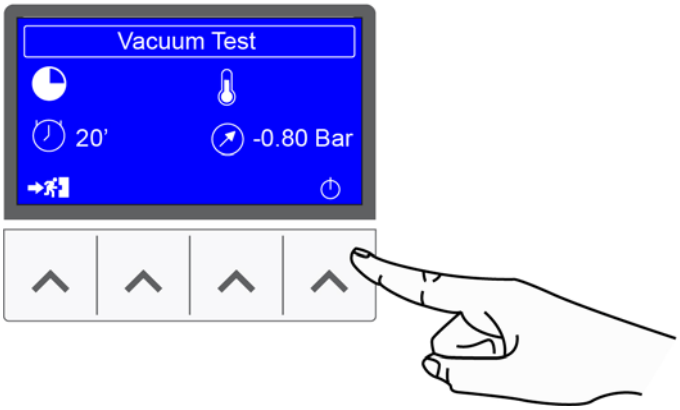
CYCLE VACUUM TEST

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.

To select the **Vacuum Test** cycle, select Vacuum Test using the arrows and confirm with OK.







The Vacuum Test program is run with the **sterilization chamber empty**, and only the trays and their supports.

NOTE

RUN THE VACUUM TEST AS THE FIRST CYCLE AFTER POWERING-ON THE EQUIPMENT.

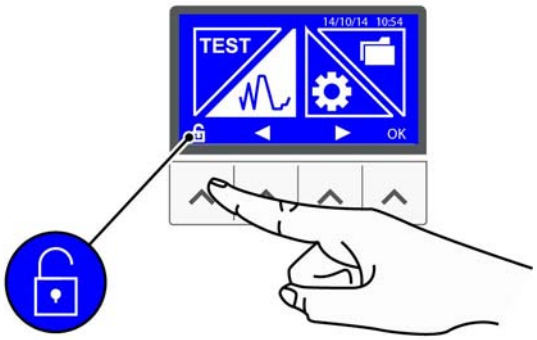
A high chamber temperature affects the variation in the vacuum value measured during the test; the system is therefore programmed to prevent execution of the test when the operating conditions are inadequate.
Close the door and start the program.
The vacuum phase starts immediately and the pressure value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

NOTE

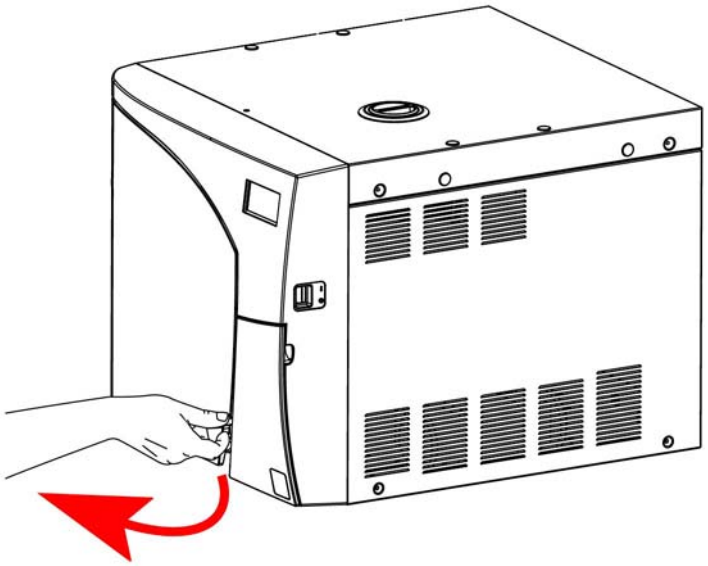
IF THE PRESSURE VARIATION EXCEEDS THE LIMIT DEFINED, THE PROGRAM IS INTERRUPTED AND AN ALARM MESSAGE GENERATED.
FOR A COMPLETE DESCRIPTION OF THE ALARMS, REFER TO THE APPENDIX.

DOOR OPENING

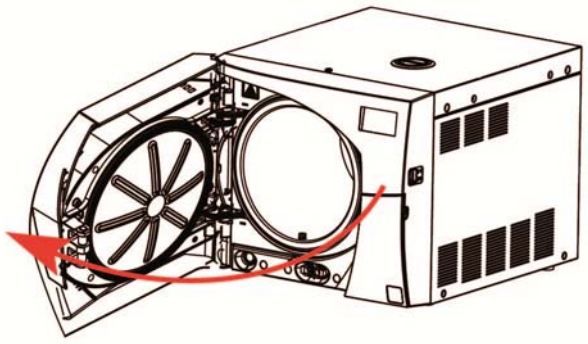
To open the autoclave door, hold down the button shown in the figure.



The door opens and stays ajar.



You can now manually open the door.

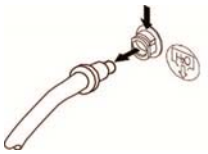


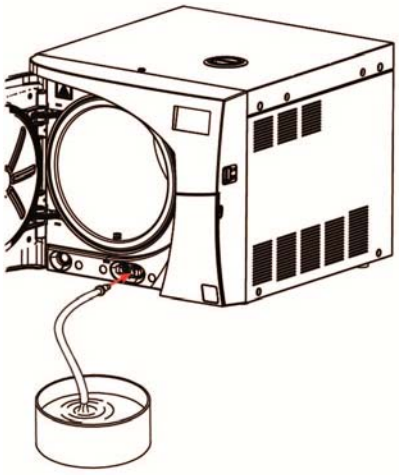
USED WATER DRAIN

Open the door and continue as follows:

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

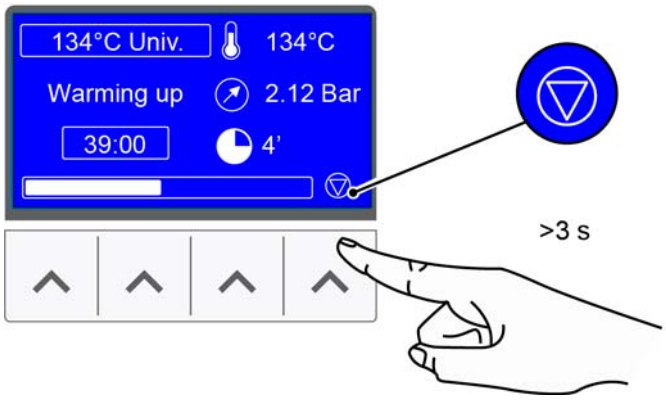
Detaching the pipe





MANUAL INTERRUPTION

The cycle can be interrupted manually by the operator at any time by holding down the button shown in the figure for three seconds.



The command generates the **error E999** as the cycle could not be completed correctly.

NOTE

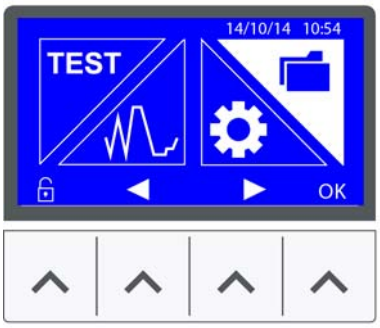
IF THE CYCLE IS INTERRUPTED DURING CERTAIN PHASES, AN AUTOMATIC CLEANING PROCEDURE OF THE INTERNAL HYDRAULIC CIRCUIT STARTS.
FOR A COMPLETE DESCRIPTION OF THE ALARMS, REFER TO THE APPENDIX "ALARM INDICATIONS".

WARNING

AFTER MANUALLY INTERRUPTING A PROGRAM, DO NOT USE THE LOAD, AS STERILIZATION IS NOT GUARANTEED.

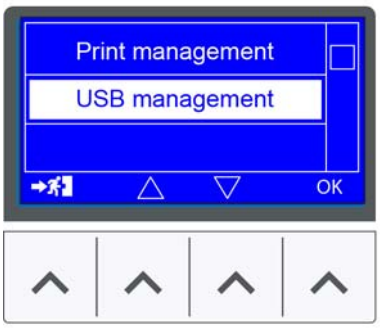
DATA MANAGEMENT

To access the DATA MANAGEMENT section, select the following icon and press the OK button.

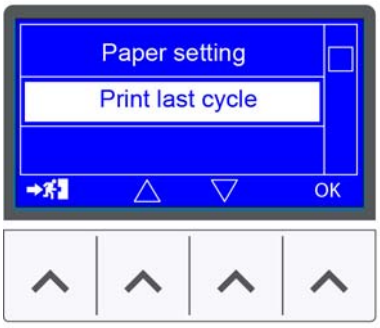


PRINT MANAGEMENT

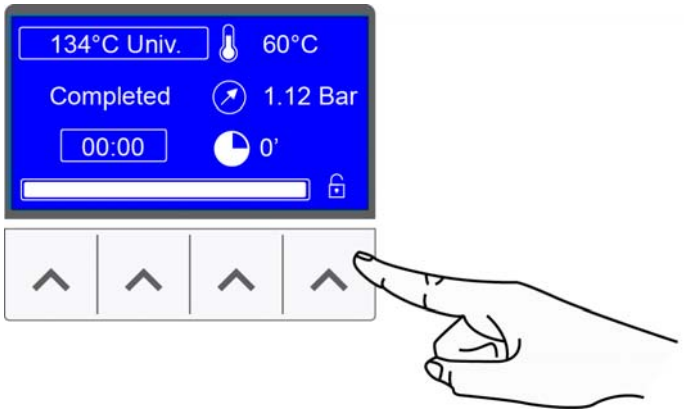
To set the parameters, select the following option and confirm with OK.



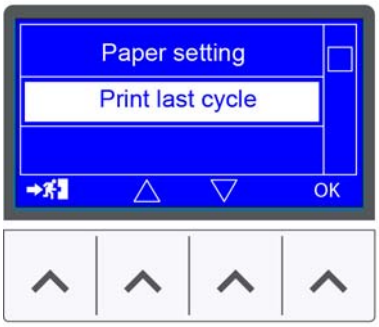
Select Print last cycle to choose between printing the Report or the Extended report.



Press ok to select paper type and go back to the previous menu. The cursor is placed on the previously selected paper.



At the end of the cycle, press the button indicated to print the report.

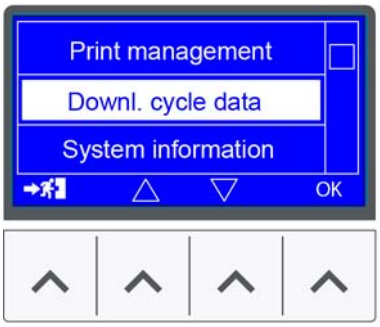


Selecting the PRINT LAST CYCLE option with the REPORT option set, the summary report of the last cycle is printed, otherwise you go back to the PAPER SETTING page.
Set the REPORT option and carry out the above described operations again.
Selecting the PRINT TECHNICAL REPORT option, the technical report is printed (only if the REPORT option is set).

DOWNLOAD CYCLE DATA

Before carrying out the following operations, insert the USB key.

Selecting CYCLE DATA DOWNLOAD, you can copy the data relating to the cycles executed (stored in the internal memory of the sterilizer) to the USB key.

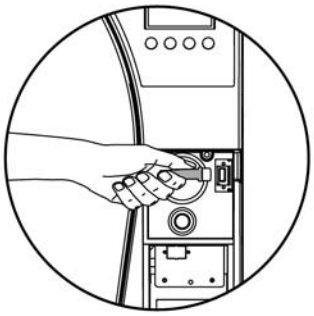


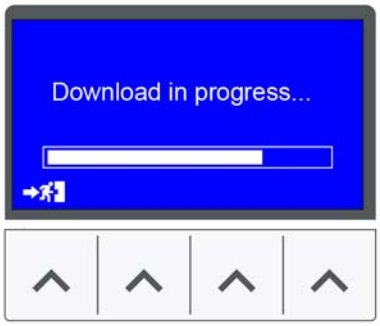
NOTE

THE USB KEY MUST BE FORMATTED USING THE FAT32 F LE SYSTEM.

You can select the number of cycles to download to the external memory.

If the USB key is not present, you are asked to insert it.
The sterilization/test cycle files are in PDF format.

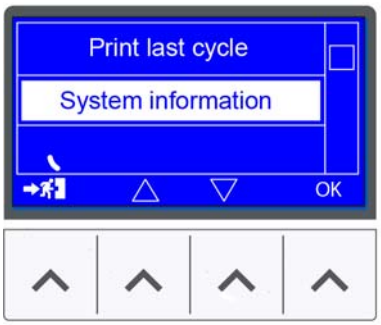




Once the data has been downloaded, you can remove the USB key.

SYSTEM INFORMATION

Selecting SYSTEM INFORMATION, all the information relating to the sterilizer settings is displayed.



APPENDIX - TECHNICAL CHARACTERISTICS SUMMARY TABLE

Device	Steam Sterilizer C-17T / C-22T	
Classification (according to the Directive 93/42/EEC and subsequent changes)	IIb	
Manufacturer	CEFLA s.c. Via Selice Prov.le 23/a 40026 Imola BO - Italy	
Power supply voltage	220 V - 240 V~ 50 Hz 220 V - 230 V~ 60 Hz 120V~ 60 Hz	
Mains fuses (6.3 x 32 mm)	F 15A 250V	
On-board fuses (5 x 20 mm)	F1: T3.15A 250V (primary transformer) F2: T 3.15A 250V (vacuum pump)	
Nominal power	2300 W 1440 W (120V~ / 60 Hz)	
Insulation class	Classe I	
Installation category	Cat. II	
Environment of use	Internal use	
Sound power level (A weighted)	< 65 dB	
Environmental operating conditions	Temperature: +15°C ÷ +35°C Relative humidity: max 80%, non-condensing Altitude: max 3000 m (a.s.l.)	
External dimensions (HxWxD) (excluding rear connections)	420 x 480x 560 mm	420 x 480x 660 mm
Net weight: empty empty with trays and supports empty, with trays and supports and water at MAX level	 about 53 kg about 54 kg about 58 kg	 about 60 kg about 62 kg about 66 kg
Sterilization chamber dimensions (Ø x D)	250 x 350 mm	250 x 450 mm
Sterilization chamber total volume	about 17 l (0.017 m^3)	about 22 l (0.022 m^3)
Sterilization chamber useful volume (with tray supports inserted)	about 10 l (0.010 m^3)	about 13 l (0.013 m^3)
Distilled water tank capacity (supply)	about 4,6 l (water at MAX level) about 0,8 l (water at MIN level)	
Sterilization programs	5 standard programs + 1 user-defined program	
Test programs	Helix/BD Test Vacuum Test	
Preheating time (from cold)	about 10 min	
USB connection	requires memories formatted with the FAT32 f le system	
Printer connection	RS232 serial (printer cable length max 2.5 m)	
Bacteriological filter (PTFE filtering element)	Porosity: 0,2 mm Connection: 1/8” NPT connector	

SAFETY DEVICES

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

- **Mains fuses** (see summary table data)
  Protection inside the device against a fault in the heating elements.
  Action: cuts the electricity.
- **Fuses protecting the electronic circuits** (see summary table data)
  Protection against a fault in the primary transformer circuit and low voltage uses.
  Action: cuts power to one or more low-voltage circuits.
- **Thermal circuit breakers on the mains voltage windings**
  Protection against overheating of the vacuum pump motor and the primary transformer windings.
  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.
- **Steam generator manual rearm safety thermostat**
  Protection against steam generator overheating.
  Action: cut-off of the electricity to the steam generator.
- **Heating element manual rearm safety thermostat**
  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: signals wrong door position.
- **Mechanized 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 lock mechanism safety microswitch**
  Confirmation of the correct closing of the door lock.
  Action: signaling the failure or incorrect operation of the door lock mechanism.
- **Self-leveling plumbing system**
  Plumbing system structure for the spontaneous leveling 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 anomaly) and generation of alarms.
- **Monitoring of the sterilizer's operation**
  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.

WATER SUPPLY CHARACTERISTICS

DESCRIPTION	WATER SUPPLY VALUES	VALUES IN CONDENSATE
DRY RESIDUE	< 10 mg/l	< 1 mg/l
SILICON OXIDE SiO2	< 1 mg/l	< 0,1 mg/l
IRON	< 0,2 mg/l l	< 0,1 mg/
CADMIUM	< 0,005 mg/l	< 0,005 mg/l
LEAD	< 0,05 mg/l	< 0,05 mg/l
HEAVY METAL RESIDUES (except iron, cadmium and lead)	< 0,1 mg/l	< 0,1 mg/l
CHLORINES	< 2 mg/l	< 0,1 mg/l
PHOSPHATES	< 0,5 mg/l	< 0,1 mg/l
CONDUCTIVITY AT 20 °C	< 15 mS/cm	< 3 mS/cm
pH VALUE	5 - 7	5 - 7
APPEARANCE	colorless, transparent,without sediments	colorless, transparent,without sediments
HARDNESS	< 0,02 mmol/l	< 0,02 mmol/l

NOTE

WHEN PURCHASING DISTILLED WATER, ALWAYS CHECK THAT THE QUALITY AND CHARACTERISTICS DECLARED BY THE PRODUCER ARE COMPATIBLE WITH THOSE SHOWN IN THE TABLE.

WARNING

THE USE OF WATER FOR GENERATING STEAM CONTAINING CONTAMINANTS IN LEVELS EXCEEDING THOSE SHOWN IN THE TABLE WILL SIGNIFICANTLY SHORTEN THE STERILIZER'S LIFE.
IN ADDITION, THIS MAY INCREASE THE OXIDATION OF MORE SENSITIVE MATERIALS AND INCREASE LIME RESIDUES ON THE GENERATOR, BOILER, INTERNAL SUPPORTS AND INSTRUMENTS.

APPENDIX – PROGRAMS

FOREWORD

The steam sterilizer is appropriate for almost all materials and instruments, so long as they are able to tolerate, without damage, a **minimum temperature of 121 °C** (otherwise, you will need to use other low-temperature sterilization systems).

The following material can normally be sterilized with steam:

- Stainless steel surgical/generic instruments;
- Carbon steel surgical/generic instruments;
- Rotating and/or vibrating instruments driven by compressed air (turbines) or mechanical transmission (counter-angles, tooth scalers);
- Glass articles:
- Mineral-based articles;
- Articles made of heat-resistant plastic;
- Articles made of heat-resistant rubber;
- Heat-resistant textiles;
- Medication materials (gauze, pads, etc.);
- Other generic material suitable for autoclave treatment.

NOTE

DEPENDING ON THE CONFORMATION OF THE MATERIAL (SOLID, HOLLOW OR POROUS), ANY PACKAGING (PAPER/PLASTIC ENVELOPE, STERILIZATION PAPER, CONTAINER, MUSLIN NAPKIN, ETC.) AND ITS HEAT-RESISTANCE, IT IS INDISPENSABLE THAT YOU CHOOSE THE APPROPRIATE PROGRAM BY REFERRING TO THE TABLE SHOWN ON THE NEXT PAGE.

WARNING

THE DEVICE MAY NOT BE USED FOR STERILIZATION OF FLUIDS, LIQUIDS OR PHARMACEUTICAL PRODUCTS.

PROGRAM SUMMARY TABLE – 17

220 V - 240 V~ 50 Hz
220 V - 230 V~ 60 Hz

DESCRIPTION CYCLE	NOMINAL VALUES				BASIC CYCLEPARAMETERS					STERILIZABLE MATERIALS				NOTES
	Temperature (°C)	Pressure (bar)	Retention time (min)	Cycle time (EN 13060	Pre-vacuum(F=fractionated; S=Single)	Standard drying(L=long; C=short)	Total cycle time (average load + max load)	Average H2O consumption(ml /cycle)	Average energy con-sumption(kWh	TYPE	MAX TOTAL WEIGHT (kg)	MAX WEIGHT FOR TRAY (kg)	MAX WEIGHT FOR ITEM (kg)	
134°C UNIVERSAL	134	2,10	4	B	F	L	37÷40	500	0,8	Unwrapped porous materials	1,00	0,30	0,30	For wrapped materials and instruments (single and double package), it is advisable to use the 3-tray conf guration
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Solid and hollow mate-rials in single package	3,00	1,00	0,25	
										Unwrapped solid and hollow materials	6,00	1,20	0,50	
										Solid and hollow in-struments A" in double package	1,50	0,50	0,25	
134°C PRION	134	2,10	>18	B	F	L	53÷56	550	0,9	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Hollow instruments in single package	3,00	1,00	0,25	
										Unwrapped solid and hollow materials	6,00	1,20	0,50	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
121°C UNIVERSAL	121	1,10	20	B	F	L	52÷55	550	0,8	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Unwrapped solid and hollow materials	6,00	1,20	0,50	
										Hollow instruments in single package	3,00	1,00	0,25	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
134°C HOLLOW UNWRAPPED	121	1,10	20	S	F	C	34÷37	700	0,7	Unwrapped hollow in-struments	7,50	1,50	0,50	
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
134°C FLASH	134	2,10	4	S	S	L	33÷36	300	0,6	Solid and hollow in-struments "B" in single package	3,00	1,00	0,25	It is advisable to use the 3-tray conf guration
										Unwrapped solid and hollow materials	6,00	1,20	0,50	
XXX°C USERS (vedi nota)	134 or. 121	2,10 or. 1,10	>4 or. >20	n.d.	F/S	L/C	n.d.	n.d.	n.d.	Unwrapped solid instru-ments (other load types are possible depending on the user settings)	n.d.	n.d.	n.d.	Variable parameters de-pending on the settings made
HELIX/BD TEST	134	2,10	3,5	-	F	C	29	-	-	Test device only(without another load)	-	-	-	
VACUUM TEST	-	-0,80	-	-	-	-	27	-	-	Empty chamber	-	-	-	

PROGRAM SUMMARY TABLE – 17

120 V~ 60 Hz

DESCRIPTION CYCLE	NOMINAL VALUES				BASIC CYCLEPARAMETERS					STERILIZABLE MATERIALS				NOTES
	Temperature (°C)	Pressure (bar)	Retention time (min)	Cycle time (EN 13060	Pre-vacuum(F=fractionated; S=Single)	Standard drying(L=long; C=short)	Total cycle time (average load ÷ max load)	Average H2O consumption(ml /cycle)	Average energy con-sumption(kWh	TYPE	MAX TOTAL WEIGHT (kg)	MAX WEIGHT FOR TRAY (kg)	MAX WEIGHT FOR ITEM (kg)	
134°C UNIVERSAL	134	2,10	4	B	F	L	44÷47	500	0,8	Unwrapped porous materials	1,00	0,30	0,30	For wrapped materials and instruments (single and double package), it is advisable to use the 3-tray conf guration
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Solid and hollow mate-rials in single package	2,50	1,00	0,25	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
										Solid and hollow in-struments A" in double package	1,50	0,50	0,25	
134°C PRION	134	2,10	>18	B	F	L	58÷61	550	0,9	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Hollow instruments in single package	2,50	1,00	0,25	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
121°C UNIVERSAL	121	1,10	20	B	F	L	57÷60	550	0,8	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
										Hollow instruments in single package	2,50	1,00	0,25	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
134°C HOLLOW UNWRAPPED	121	1,10	20	S	F	C	38÷40	500	0,7	Unwrapped hollow in-struments	5,00	1,50	0,50	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
134°C FLASH	134	2,10	4	S	S	L	38÷40	300	0,6	Solid and hollow in-struments "B" in single package	2,50	1,00	0,25	It is advisable to use the 3-tray conf guration
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
XXX°C USERS (vedi nota)	134 or. 121	2,10 or. 1,10	>4 or. >20	n.d.	F/S	L/C	n.d.	n.d.	n.d.	Unwrapped solid instru-ments (other load types are possible depending on the user settings)	n.d.	n.d.	n.d.	Variable parameters de-pending on the settings made
HELIX/BD TEST	134	2,10	3,5	-	F	C	35	-	-	Test device only(without another load)	-	-	-	
VACUUM TEST	-	-0,80	-	-	-	-	27	-	-	Empty chamber	-	-	-	

PROGRAM SUMMARY TABLE – 22

220 V - 240 V~ 50 Hz
220 V - 230 V~ 60 Hz

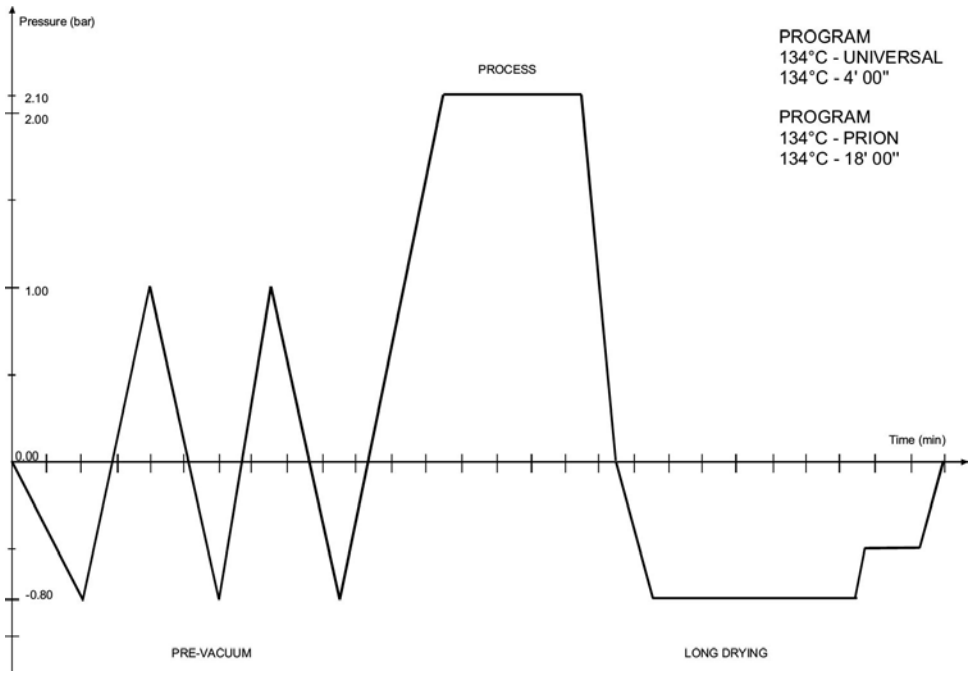
DESCRIPTION CYCLE	NOMINAL VALUES				BASIC CYCLEPARAMETERS					STERILIZABLE MATERIALS				NOTES
	Temperature (°C)	Pressure(bar)	Retention time (min)	Cycle time (EN 13060)	Pre-vacuum(F=fractionated; S=Single)	Standard drying(L=long; C=short)	Total cycle time (average load + max load)	Average H2O consumption(ml /cycle)	Average energy con-sumption(kWh	TYPE	MAX TOTAL WEIGHT(kg)	MAX WEIGHT FOR TRAY (kg	MAX WEIGHT FOR ITEM (kg)	
134°C UNIVERSAL	134	2,10	4	B	F	L	40÷43	675	0,8	Unwrapped porous materials	1,25	0,40	0,30	For wrapped materials and instruments (single and double package), it is advisable to use the 3-tray conf guration
										Porous materials in sin-gle package	1,00	0,30	0,25	
										Porous materials in double package	0,75	0,25	0,25	
										Solid and hollow mate-rials in single package	4,00	1,25	0,25	
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
										Solid and hollow in-struments A in double package	2,00	0,60	0,25	
134°C PRION	134	2,10	>18	B	F	L	57÷60	700	0,9	Unwrapped porous materials	1,25	0,40	0,30	
										Porous materials in sin-gle package	1,00	0,30	0,25	
										Porous materials in double package	0,75	0,25	0,25	
										Hollow instruments in single package	4,00	1,25	0,25	
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
										Solid and hollow in-struments in double package	2,00	0,60	0,25	
121°C UNIVERSAL	121	1,10	20	B	F	L	55÷58	700	0,8	Unwrapped porous materials	1,25	0,40	0,30	
										Porous materials in sin-gle package	1,00	0,30	0,25	
										Porous materials in double package	0,75	0,25	0,25	
										Hollow instruments in single package	4,00	1,25	0,25	
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
										Solid and hollow in-struments in double package	2,00	0,60	0,25	
134°C HOLLOW UN-WRAPPED	121	1,10	20	S	F	C	34÷37	700	0,7	Unwrapped hollow in-struments	7,50	1,50	0,50	
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
134°C FLASH	134	2,10	4	S	S	L	31÷33	375	0,6	Solid and hollow in-struments "B" in single package	4,00	1,25	0,25	It is advisable to use the 3-tray conf guration
										Unwrapped solid and hollow materials	7,50	1,20	0,50	
XXX°C USER (see note)	134 or. 121	2,10 or. 1,10	>4 or. >20	n.d.	F/S	L/C	n.d.	n.d.	n.d.	Unwrapped solid instru-ments (other load types are possible depending on the user settings)	n.d.	n.d.	n.d.	Variable parameters depending on the set-tings made
HELIX/BD TEST	134	2,10	3,5	-	F	C	31	-	-	Test device only(without another load)	-	-	-	
VACUUM TEST	-	-0,80	-	-	-	-	29	-	-	Empty chamber	-	-	-	

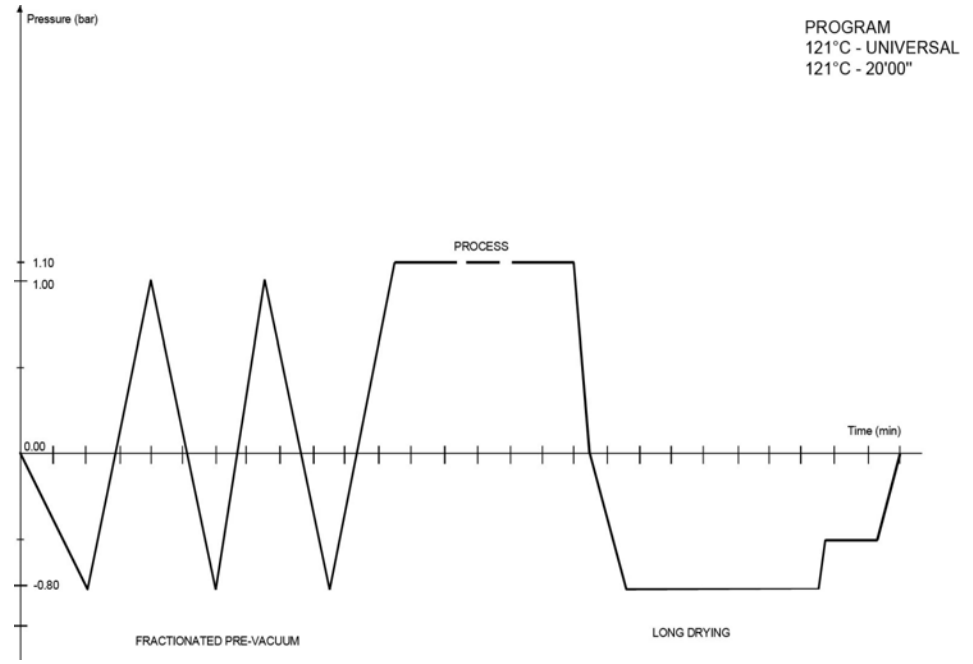
PROGRAM SUMMARY TABLE – 22

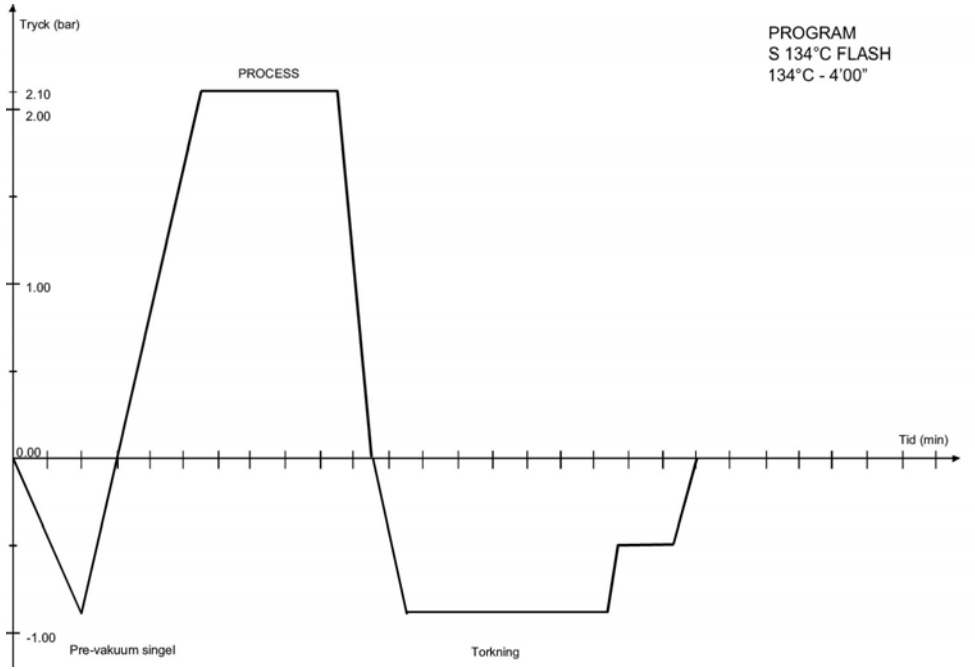
120 V~ 60 Hz

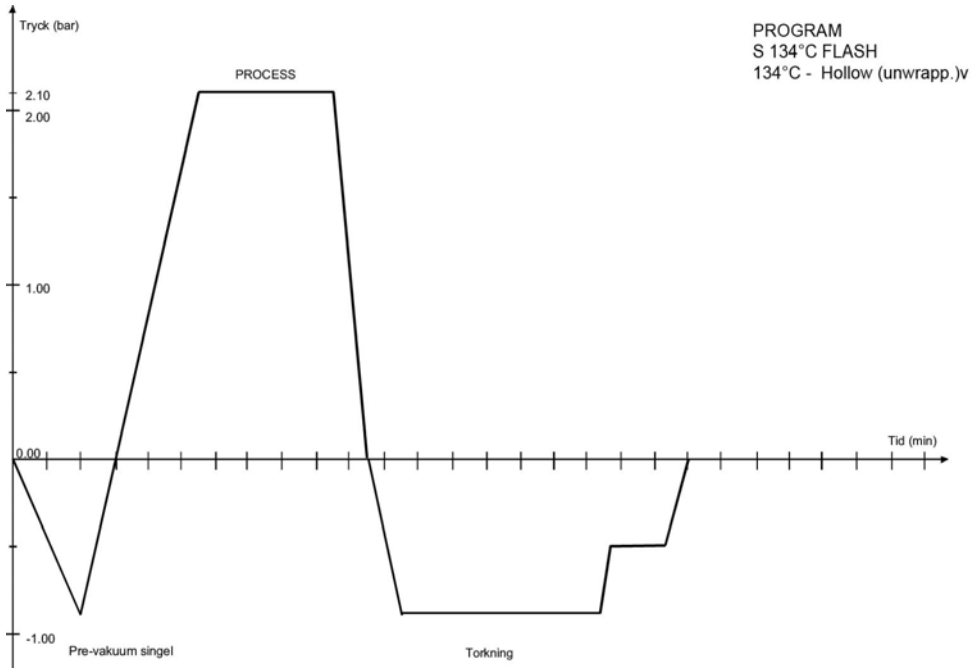
DESCRIPTION CYCLE	NOMINAL VALUES				BASIC CYCLEPARAMETERS					STERILIZABLE MATERIALS				NOTES
	Temperature (°C)	Pressure(bar)	Retention time (min)	Cycle time (EN 13060)	Pre-vacuum(F=fractionated; S=Single)	Standard drying(L=long; C=short)	Total cycle time (average load ÷ max load)	Average H2O consumption(ml /cycle)	Average energy con-sumption(kWh	TYPE	MAX TOTAL WEIGHT(kg)	MAX WEIGHT FOR TRAY (kg	MAX WEIGHT FOR ITEM (kg)	
134°C UNIVERSAL	134	2,10	4	B	F	L	48÷51	675	0,8	Unwrapped porous materials	1,00	0,30	0,30	For wrapped materials and instruments (single and double package), it is advisable to use the 3-tray conf guration
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Solid and hollow mate-rials in single package	2,50	1,00	0,25	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
										Solid and hollow in-struments A in double package	1,50	0,50	0,25	
134°C PRION	134	2,10	>18	B	F	L	62÷65	700	0,9	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,25	
										Hollow instruments in single package	2,50	1,00	0,25	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
121°C UNIVERSAL	121	1,10	20	B	F	L	61÷64	700	0,8	Unwrapped porous materials	1,00	0,30	0,30	
										Porous materials in sin-gle package	0,75	0,25	0,25	
										Porous materials in double package	0,60	0,20	0,20	
										Hollow instruments in single package	2,50	1,20	0,50	
										Unwrapped solid and hollow materials	5,00	1,00	0,25	
										Solid and hollow in-struments in double package	1,50	0,50	0,25	
134°C HOLLOW UN-WRAPPED	121	1,10	20	S	F	C	40÷43	700	0,7	Unwrapped hollow in-struments	5,00	1,20	0,50	
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
134°C FLASH	134	2,10	4	S	S	L	39÷42	375	0,6	Solid and hollow in-struments "B" in single package	2,50	1,00	0,25	It is advisable to use the 3-tray conf guration
										Unwrapped solid and hollow materials	5,00	1,20	0,50	
XXX°C USER (see note)	134 or. 121	2,10 or. 1,10	>4 or. >20	n.d.	F/S	L/C	n.d.	n.d.	n.d.	Unwrapped solid instru-ments (other load types are possible depending on the user settings)	n.d.	n.d.	n.d.	Variable parameters depending on the set-tings made
HELIX/BD TEST	134	2,10	3,5	-	F	C	38	-	-	Test device only(without another load)	-	-	-	
VACUUM TEST	-	-0,80	-	-	-	-	29	-	-	Empty chamber	-	-	-	

STERILIZATION PROGRAM DIAGRAM

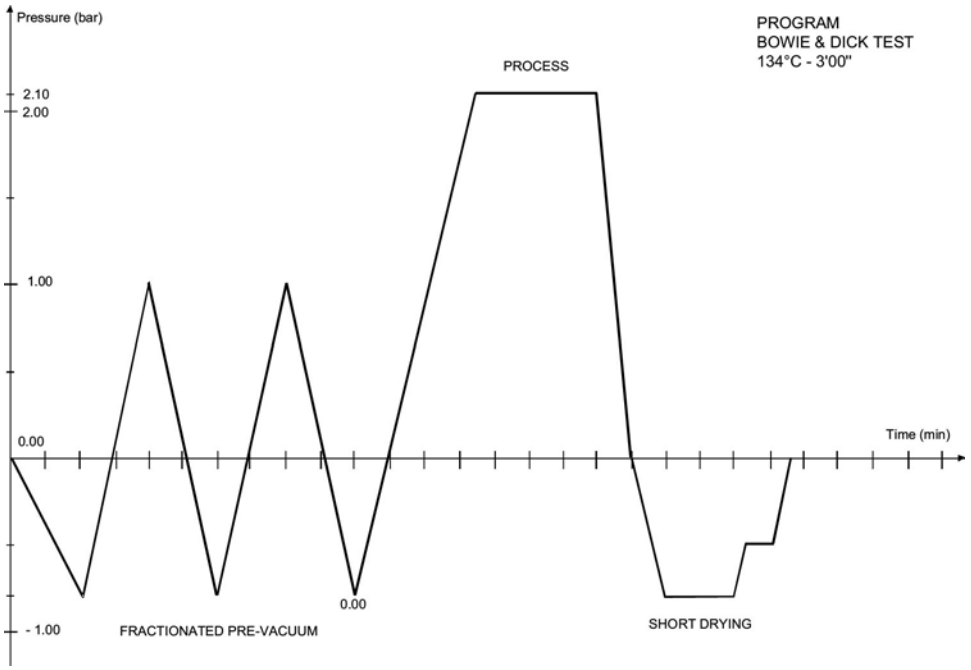


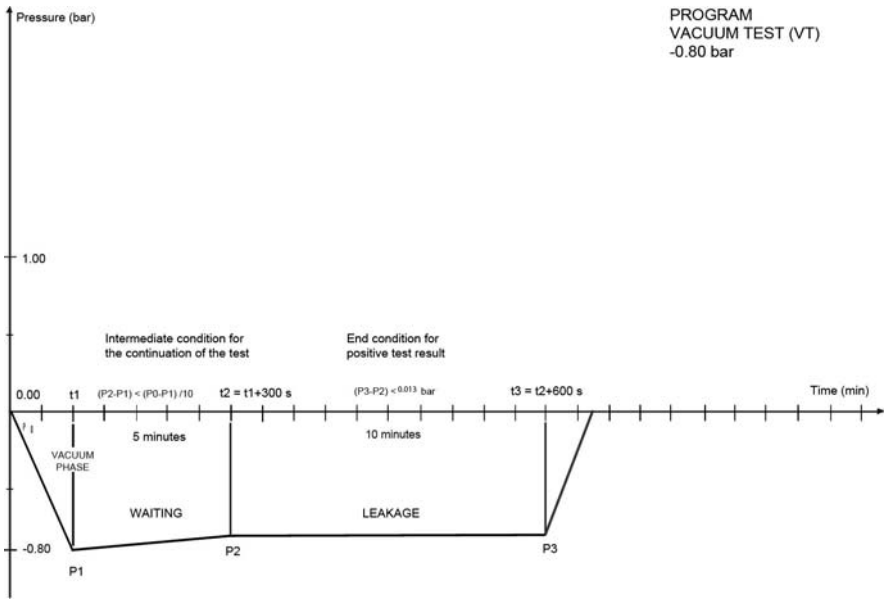



Tryck (bar)
PROCESS
PROGRAM
S 134°C FLASH
134°C - 4'00"
2.10
2.00
1.00
0.00
-1.00
Tid (min)
Pre-vakuum singel
Torkning


Tryck (bar)
PROCESS
PROGRAM
S 134°C FLASH
134°C - Hollow (unwrapp.)v
2.10
2.00
1.00
0.00
-1.00
Tid (min)
Pre-vakuum singel
Torkning

DIAGRAMS OF THE TEST PROGRAMMES





EXAMPLES OF PRINTED REPORTS

(WITH OPTIONAL PRINTER)

PROGRAM PRINTING (STANDARD)

Model
S/N
Ver. SW
Counter 0007/0015
Selection 134 °C SOLID
Temperature 134 °C
Pressure 2.10 bar
Process time 4 min
Stand-by LOW
Pre-vacuum SINGLE
Drying FAST

CYCLE START 01/02/11 12:14

Time		C	bar
00:01	CS	079.4	+0.00
02:02	1PV	093.7	-0.80
05:48	ET	135.6	+2.15
06:02	SS	135.9	+2.17
07:02		135.6	+2.14
08:02		135.5	+2.14
09:02		135.4	+2.14
10:02	SE	135.5	+2.15
10:37	DS	104.1	+0.00
11:41	SPD	047.5	-0.90
16:08	DE	047.6	-0.84
17:12	CE	084.6	-0.04
06:32	MAX	136.0	
09:59	MIN	135.4	

Drying Pulses 01
CYCLE END 01/02/11 12:36

STERILIZATION: POSITIVE

Model
S/N
Ver. SW
Counter 0007/0015
Selection 134 °C UNIVERSAL
Temperature 134 °C
Pressure 2.10 bar
Process time 4 min
Stand-by HIGH
Pre-vacuum FRACTIONATED
Drying STANDARD

CYCLE START 01/02/10 09:52

Time		C	bar
00:01	CS	075.1	-0.00
01:57	1PV	047.S	-0.80
04:53	1PP	120.5	+1.00
07:00	2PV	061.1	-0.80
09:15	2PP	120.4	+0.98
11:22	3PV	061.1	-0.80
15:04	ET	135.5	+2.15
15:19	SS	135.9	+2.17
16:19		135.4	+2.14
17:18		135.5	+2.15
18:19		135.4	+2.14
19:19	SE	135.5	+2.15
19:53	DS	104.4	+0.00
20:57	SPD	048.4	-0.90
26:55	EPD	094.9	-0.86
29:15	DE	112.6	-0.47
29:43	CE	115.8	-0.04
16:20	MAX	135.9	
18:11	MIN	135.4	

Drying Pulses 05
CYCLE END 01/02/11 10:28

STERILIZATION: POSITIVE

PROGRAM PRINTING HELIX/BD TEST

Model
S/N
Ver. SW
Counter 0011/0019
Selection HELIX TEST
Temperature 134 °C
Pressure 2.10 bar
Process time 3.5 min
CYCLE START 01/02/11 16:38

Time		C	bar
00:01	CS	076.4	+0.00
02:06	1PV	089.3	-0.89
04:35	1PP	120.4	+0.99
05:45	2PV	062.5	-0.78
07:02	2PP	120.2	+0.97
08:15	3PV	061.1	-0.79
11:00	..	135.6	+2.15
11:14	..	136.0	+2.17
12:14		135.6	+2.14
13:14		135.6	+2.15
14:14		135.5	+2.14
14:45	..	135.4	+2.14
15:20	..	111.5	+0.00
16:34	...	047.8	-0.89
18:21	...	059.5	-0.86
19:21	..	075.4	-0.50
20:06	CE	078.7	-0.04
12:33	MAX	136.0	
14:44	MIN	135.4	

Drying pulses 01
CYCLE END 01/02/11 17:01

HELIX TEST COMPLETE
Please attach the indicator hereunder

PROGRAM PRINTING VACUUM TEST

Model
S/N
Ver. SW
Counter 0011/0019
Selection VACUUM TEST

CYCLE START 01/02/11 11:37

Time		C	bar
00:00	CS	035.0	+0.00
01:39	E1F	037.4	-0.80
6:39	E2F	038.4	-0.79
22:39	E3F	042.0	-0.79
23:54	CE	045.5	-0.01

CYCLE END 01/02/11 12:01

VACUUM TEST: POSITIVE

OPERATOR

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.

FOREWORD

For better quality maintenance, supplement ordinary checks with regular periodic examinations by the service department (see Appendix).

It is also fundamental to perform a **periodic sterilizer validation** i.e., a check of the thermodynamic parameters of the process, comparing them with the reference values provided with suitably calibrated instruments. In this regard, see the paragraph, "Periodic Sterilizer's Validation", further below in this Appendix.

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

WARNING

IN THE EVENT OF THE REPLACEMENT OF THE DEVICE'S COMPONENTS OR PARTS, REQUEST AND/OR USE ORIGINAL REPLACEMENT PARTS ONLY.

ORDINARY MAINTENANCE PROGRAMME

The table summarizes the maintenance required to keep the sterilizer operating at peak efficiency.

In the case of **very intense use** we recommend **shortening** maintenance intervals:

DAILY	Clean the gasket on the porthole Clean external surfaces
WEEKLY	Clean the sterilization chamber and relative accessories Disinfect external surfaces
MONTHLY	Clean the internal (and external - if installed) distilled water tank Safety valve maintenance Clean (or replace) the drain filter
ANNUALLY	Validate sterilizer (***see dedicated paragraph***)

SCHEDULED MAINTENANCE MESSAGES

The steriliser periodically reminds the user about necessary "routine" maintenance operations that must be carried out in order to ensure the proper operation of the device.

Press the OK button to confirm that the required maintenance operation has been completed.

Press the button to postpone the operation.

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

The user is given warning messages with the following frequency:

WARNING MESSAGES	FREQUENCY
BOILER FILTER CLEANING	Every 250 cycles
BACTERIOLOGICAL FILTER REPLACEMENT	Every 500 cycles
BOILER GASKET REPLACEMENT	Every 1.000 cycles
GENERAL SERVICE	Every 3.000 cycles

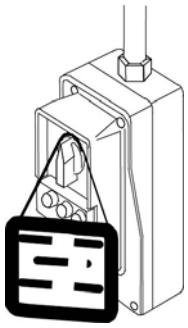
Whenever significant reductions in performance, repeat alarms or a visible deterioration of parts subject to wear is noted, it is recommended that maintenance operations be carried out in advance of the deadlines programmed in the system.

Keep the following **general warnings** in mind:

- **Do not** wash the sterilizer with direct jets of water, either under pressure or 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 metal-cleaning products, whether solids or liquids, to clean the device or sterilization chamber;
- **Do not** use chemical products or disinfectants to clean the sterilization chamber. In fact, these products can damage the sterilization chamber, even irreparably;
- **Do not** allow lime residue or other substances to accumulate in the sterilization chamber or on the door and its gasket, but periodically remove them. In fact, they can damage these parts over time in addition to compromising the operation of the components installed along the plumbing circuit.

NOTE

THE FORMATION OF WHITE SPOTS ON THE BASE OF THE INTERNAL WALLS OF THE STERILIZATION CHAMBER MEANS THAT YOU ARE USING LOW-QUALITY DEMINERALIZED WATER.



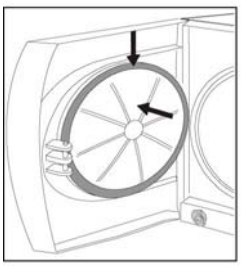
DANGER

BEFORE PERFORMING ORDINARY MAINTENANCE, MAKE SURE THAT THE POWER SUPPLY CORD IS REMOVED FROM THE MAINS SOCKET.
WHENEVER IT IS NOT POSSIBLE, PUT IN OFF THE EXTERNAL BREAKER OF THE EQUIPMENT POWER SUPPLY LINE.
IF THE EXTERNAL BREAKER IS FAR AWAY OR, AT ANY RATE, NOT VISIBLE TO THE MAINTAINER, PLACE A WORK IN PROGRESS SIGN ON THE EXTERNAL BREAKER AFTER TURNING IT OFF.

DESCRIPTION OF MAINTENANCE INTERVENTIONS

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

CLEAN GASKET AND PORTHOLE



To eliminate any traces of limestone, clean the chamber gasket and the door window with a clean cotton cloth that has been soaked in a weak solution of water and vinegar (or a similar product; verify the contents on the label before using).

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

CLEAN EXTERNAL SURFACES

Clean all the external parts using a clean cotton cloth dampened with water and, possibly, the addition of a neutral detergent.
Dry the surfaces and remove any residue before using the device.

CLEAN STERILIZATION CHAMBER AND ACCESSORIES

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 accessories.

NOTE

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 APPENDIX TECHNICAL FEATURES).

DISINFECT EXTERNAL SURFACES

For the occasional disinfection of the external surfaces, you can use either denatured alcohol or detergents with a minimum percentage of sodium hypochlorite (or equivalent).

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 using a coin or another suitable tool.
Then unscrew the union containing the filter.
Remove the filter from its holder 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 from removal, and making sure **that you** screw the union on in such a way that the drain holes **re positioned at the level of the boiler wall.**

NOTE

PROPERLY FIT THE FILTER IN ITS HOUSING; FITTING IT ONLY PARTIALLY MAY DAMAGE THE COMPONENT.

REPLACE THE BACTERIOLOGICAL FILTER

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

NOTE

A SPARE BACTERIOLOGICAL FILTER IS PROVIDED WITH THE STERILIZER. TO ORDER FURTHER FILTERS, REFER TO THE APPENDIX TECHNICAL SERVICE.

BOILER GASKET REPLACEMENT

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

PERIODIC STERILIZER VALIDATION

As happens with all equipment, it is possible, and sometimes inevitable, to have a decrease in performance and the effectiveness of components along its 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.*

DISPOSING THE EQUIPMENT WHEN NO LONGER USED

In accordance with Directives 2002/95/ EC, 2002/96/ EC and 2003/108/ EC, regarding the reduction in use of dangerous substances in electrical and electronic equipment, as well as waste disposal, such equipment may not be disposed of as normal urban waste and must be separated accordingly.
When purchasing a new, equivalent piece of equipment, the old piece of equipment that has reached its end-of-life must be handed over to the reseller for proper disposal. As regards reuse, recycling and other forms of recovery of the above mentioned waste, the manufacturer carries out the functions def ned in the individual national legislations.
The proper collection and separation of such equipment for recycling, treatment and disposal helps avoid any possible negative effects on the environment and health and facilitates the recycling of the materials of which the equipment is made. The crossed out rubbish can symbol indicates that the product, at the end-of-life, must be collected separately from other types of waste.

WARNING!

IMPROPER DISPOSAL OF THE PRODUCT RESULTS IN THE APPLICATION OF SANCTIONS WHICH ARE DEFINED BY INDIVIDUAL NATIONAL LAWS.

APPENDIX - GENERAL PROBLEMS

FOREWORD

If you run into a problem or alarm while using the device, you should **not** be immediately concerned.
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 anomaly and then take suitable corrective action, either autonomously or with the help of the **Technical Support Department (see Appendix Z).**

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.

TROUBLESHOOTING

If your sterilizer is **not** working correctly, please make the following checks **before** calling the Technical Support Department:

PROBLEM	POSSIBLE CAUSE	PROPOSED SOLUTION
The sterilizer does not power-on.	The power cord is not plugged-in.	Plug it in.
	There is no voltage at the socket.	Check the cause of the lack of voltage at and socket and fix it.
	The main switch and/or differential switch are OFF.	Turn the switch ON.
	The mains 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. **NOTE** UNDER NORMAL CONDITIONS, THE AVERAGE PREHEATING TIME IS ABOUT 10-15 MINUTES.
The safety valve has intervened.	Locking ring loosened. Presence of anomalous overpressure in the chamber.	Check that the knurled locking ring is correctly tightened on the upper part of safety valve. **DANGER** LET THE DEVICE COOL, OR WEAR GLOVES TO AVOID BEING BURNED WHEN TOUCHING THE VALVE.
There is water on the support surface of the sterilizer.	Automatic water filling system tube (op-tional) not properly connected.	Check the seal of the unions; if necessary, refit paying greater attention. Check that the tubes are completely fitted on the unions; check that the hose clamps are fitted.
	Steam leaks from the gasket.	At the end of the cycle, clean the gasket and porthole of the container under pressure. Check if the gasket is damaged. Run another cycle and check the situation.
Excessive humidity on the material and/or instruments at the end of the program.	Excessive quantity of material inside the sterilization chamber.	Check the quantity of material sterilized and make sure that it does not exceed the maximum allowed quantity, depending on the type of load.(See the Summary Table in Appendix Technical Characteristics”).

PROBLEM	POSSIBLE CAUSE	PROPOSED SOLUTION
	Material not correctly positioned.	Position the material, and especially wrapped material, according to the instructions.(See the Chapter, “Preparing the Material”).
	Wrong sterilization program selection	Select the appropriate sterilization program for the type of material to be treated.(See the Summary Table in Appendix “Programs”).
	Drain filter of the sterilization chamber obstructed.	Clean or replace the drain filter (See Appendix “Maintenance”).
Traces of oxidation or spots on instruments	Quality of the instruments is not adequate.	Check the quality of the instruments with the problem, checking whether the material they are made of can tolerate steam sterilization.
	Quality of the distilled water not adequate.	Empty the tank and fill it with high-quality distilled water. See the 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 the Chapter, “Preparing the Material”).
	Contact between instruments made of different metals.	Separate instruments made of different metals. (See the Chapter, “Preparing the Material”).
	Lime residue on the wall of the sterilization chamber and/or accessories.	Clean the device and its parts, as required. (See Appendix “Maintenance”).
Blackening of the instruments or damage material.	Wrong sterilization program selection.	Check the adequacy of the sterilization temperature of the selected program in relation to the material to be treated. (See the Summary Table in Appendix “Programs”).

APPENDIX – ALARMS

NOTE

IF THE PROBLEM PERSISTS, CONTACT TECHNICAL SERVICE (SEE APPENDIX) COMMUNICATING THE STERILIZER MODEL AND SERIAL NUMBER.
THIS DATA IS INDICATED ON THE REGISTRATION PLATE ON THE REAR OF THE DEVICE AND ON THE DECLARATION OF CONFORMITY

FOREWORD

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

E = ERROR/WARNING
Incorrect handling and/or use or a cause outside the device.
The problem can normally be solved by the user.
Code format: **Exxx** **(xxx = identif cation number 000 ÷ 999)**

A = ALARM
First level fault
The problem can normally be solved on site by a specialised technician.
Code format: **Axxx** **(xxx = identif cation number 000 ÷ 999)**

H = HAZARD
Second level fault
The problem can normally be solved by the Technical Service Centre.
Code format: **Hxxx** **(xxx = dentif cation number 000 ÷ 999)**

S = SYSTEM ERROR
Electronic system error (HW-FW).
Code format: **Sxxx** **(xxx = identif cation number 000 ÷ 999)**

NOTE

IN THE CASE OF AN ALARM, PLEASE ONLY REMOVE VOLTAGE FROM THE DEVICE AFTER EXECUTING A RESET (SEE THE PARAGRAPH, “RESETTING THE SYSTEM”).

ALARM INTERVENTION

When the alarm intervenes, **the cycle** (or normal operation) is interrupted,, the relative **alarm code** and message are shown on the display and an **acoustic warning is sounded**.

ALARM DURING A CYCLE

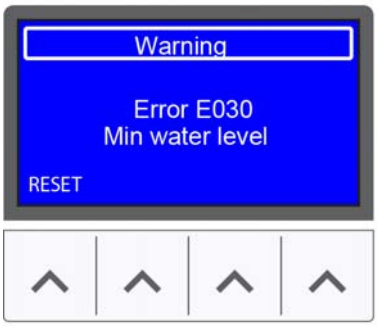
The alarm procedure has been devised so that the user cannot **confuse** an abnormal cycle with a correctly completed cycle a**nd hence involuntarily use non-sterile material**; it is structured to guide the user up to sterilizer **RESET** and subsequent use.

SYSTEM RESET

The system can be **reset** in two **alternative** ways depending on the type of alarm that has occurred (see **the list of alarm codes further on in this** appendix):

1) Pressing the OK button
2) Following the on-screen instructions and holding down the RESET button for about 3 seconds.

Pressing the “padlock” button for 3 seconds, the sterilizer door opens.



Pressing the RESET button for about 3 seconds, you go back to the initial menu.

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

WARNING

NEVER TURN OFF THE DEVICE BEFORE HAVING DONE THE RESET.

ALARM CODES

ALARM CODES

The **list** of alarm codes and, consequently, the messages displayed on the LCD and relative RESET mode, is as follows:

ERRORS (CATEGORY E)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET PROCEDURE
E000	Black-out	BLACK-OUT	2
E001	Excessive mains voltage	OVERVOLTAGE	1
E002	Water conductivity threshold 1 exceeded	H2O QUALITY INSUFFICIENT	1
E003	Water conductivity threshold 2 exceeded	H2O QUALITY INSUFFICIENT	1
E010	Door open	DOOR OPEN	1
E020	Door lock system activation timeout exceeded (**closing**)	DOOR LOCK TIMEOUT	1 (then reattempt or turn off)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET PROCEDURE
E021	Door lock system activation timeout exceeded (**opening**)	DOOR LOCK TIMEOUT	1 (then reattempt or turn off)
E030	The water in the feed tank is at minimum level (MIN))	MIN WATER LEVEL	1
E031	The water in the drain tank is at maximum level (MAX)	MAX DRAIN LEVEL	1
E040	Tank filling failed (automatic filling)	TOP-UP PROBLEM	1
E041	Too frequent tank filling (automatic filling)	TOP-UP PROBLEM	1
E260	Chamber depressurization too slow	PPD SLOW	1
E261	Chamber levelling too slow	LEVELLING SLOW	1
E900	Vacuum test failed (during TEST PHASE)	TEST FAILED	2
E901	Vacuum test failed (during STANDBY PHASE)	TEST FAILED	2
E902	Vacuum test failed (vacuum pulse timeout exceeded)	TEST FAILED	2
E999	Manually interrupting the cycle	MANUAL INTERRUPTION	2

1 = OK (warning)
2 = OK + door unlocking + RESET

ALARMS (CATEGORY A)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET PROCEDURE
A022	Door lock microswitch failure (**OFF-OFF**)	DOOR LOCK PROBLEM	1
A032	Problem with the level sensor	H2O LEVEL PROBLEM	1
A101	Temperature sensor PT1 failed (sterilization chamber)	PTx INTERRUPTED	1
A102	Temperature sensor PT2 failed (steam generator)	PTx INTERRUPTED	1
A103	Temperature sensor PT3 failed (heating element)	PTx INTERRUPTED	1
A105	Temperature sensor PT5 failed (conductivity measurement compensation)	PTx INTERRUPTED	1
A111	Temperature sensor PT1 short-circuited (sterilization chamber)	PTx SHORT-CIRCUITED	1
A112	Temperature sensor PT2 short-circuited (steam generator)	PTx SHORT-CIRCUITED	1
A113	Temperature sensor PT3 short-circuited (heating element)	PTx SHORT-CIRCUITED	1
A115	Temperature sensor PT5 short-circuited (conductivity measurement compensation)	PTx SHORT-CIRCUITED	1
A116	ADC error	ADC ERROR	1
A120	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A121	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A122	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A123	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A124	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A125	Reference heating element acquisition chain fault	REFERENCE HEATING ELEMENT FAULT	1
A201	Pre-heating not executed within timeout (ste-am generator)	GENERATOR WARM-UP PROBLEM	2
A202	Pre-heating not executed within timeout (tube bundle heating element)	HEATING ELEMENT WARM-UP PROBLEM	2
A203	Pre-heating slow (steam generator)	GENERATOR WARM-UP SLOW	2
A204	Pre-heating slow (tube bundle heating ele-ment)	HEATING ELEMENT WARM-UP SLOW	2

1 = OK (warning)
2 = OK + door unlocking + RESET

ALARMS (CATEGORY A)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET PROCEDURE
A250	1st vacuum pulse not reached within the timeout	PV1 TIMEOUT	2
A251	1st rise back up to atmospheric pressure not reached within the timeout	ATM1 TIMEOUT	2
A252	1st pressure pulse not reached within the timeout	PP1 TIMEOUT	2
A253	2nd vacuum pulse not reached within the timeout	PV2 TIMEOUT	2
A254	2nd rise back up to atmospheric pressure not reached within the timeout	ATM2 TIMEOUT	2
A255	2nd pressure pulse not reached within the timeout	PP2 TIMEOUT	2
A256	3rd vacuum pulse not reached within the ti-meout	PV3 TIMEOUT	2
A257	3rd rise back up to atmospheric pressure not reached within the timeout	ATM3 TIMEOUT	2
A258	3rd pressure pulse not reached within the timeout	PPP TIMEOUT	2
A260	Chamber depressurization not completed within the timeout	PPD TIMEOUT	2
A261	Chamber levelling not completed within the timeout	LEVELLING TIMEOUT	2
A353	1st drop to atmospheric pressure not comple-ted within the timeout	DRAIN TIMEOUT	2
A356	2nd drop to atmospheric pressure not comple-ted within the timeout	DRAIN TIMEOUT	2

1 = OK (warning)
2 = OK + door unlocking + RESET

HAZARDS (CATEGORY H)

CODE	ALARM DESCRIPTION	MESSAGE ON THE DISPLAY	RESET PROCEDURE
H150	The MPX pressure sensor is broken	MPX INTERRUPTED	3
H160	MPX sensor short-circuited/not connected	MPX SHORT-CIRCUITED	3
H400	P_{conv}/T ratio not balanced (P_{conv}>T) (**PROCESS phase**)	INCORRECT P/T RATIO	2
H401	T/P_{conv} ratio not balanced (T>P_{conv}) (**PROCESS phase**)	INCORRECT P/T RATIO	2
H402	Temperature above the MAXIMUM limit (**PROCESS phase**)	T ABOVE MAX LIMIT	2
H403	Temperature below the MINIMUM limit (**PROCESS phase**)	T BELOW MIN LIMIT	2
H404	Temperature fluctuating over limit (**PROCESS phase**)	T FLUCTUATING OVER LIMIT	2
H405	Pressure above MAX limit (**PROCESS phase**)	P ABOVE MAX LIMIT	2
H406	Pressure below Min limit (**PROCESS phase**)	P BELOW MIN LIMIT	2
H410	Retention time incorrect (**PROCESS phase**)	TIMER PROBLEM	2
H990	Excessive pressure (sterilization chamber, MPX)	EXCESSIVE PRESSURE	2
H991	Overheating (sterilization chamber, PT1)	PT1 OVERHEATING	2
H992	Overheating (steam generator, PT2)	PT2 OVERHEATING	2
H993	Overheating (tube bundle heating element, PT3)	PT3 OVERHEATING	2

SYSTEM ERRORS (CATEGORY S)

CODE	ALARM DESCRIPTION	LCD INDICATION	RESET MODE
S001	Flash memory not accessible	FLASH MEMORY NOT ACCESSIBLE	3
S002	Flash memory full	FLASH FULL	3
S003	SD memory card not accessible	SD CARD NOT ACCESSIBLE	3
S004	SD memory card full	SD CARD FULL	3
S005	USB stick not accessible	USB STICK NOT ACCESSIBLE	3
S006	USB stick not accessible	USB STICK NOT ACCESSIBLE	3
S007	USB stick full	USB STICK FULL	

1 = OK (warning)
2 = OK + door unlocking + RESET

TROUBLESHOOTING

Based on the **type of alarm**, below we provide instructions for identifying the possible causes and restoring correct operation:

ERRORS (category E)

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
E000	Sudden power failure (**black-out**).	Wait for the power to be restored and do a **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 do a **RESET** following the instructions.
	The mains fuses have burned	Replace with new fuses of the same nominal value. (See sum-mary table in the **Appendix "Technical features"**). device on again and do a **RESET** following the instructions.
E001	Abnormal voltage peak on the mains	Do a reset following the instructions. If the problem occurs again, have the mains electric system checked by a technician.
E002	The feed tank contains water of inadequate quality.	Do a RESET following the instructions. Empty the feed tank and refill it with distilled water of adequate quality (<15µs/cm). If an automatic filling system is present, empty the external container and fill it with water of adequate quality. If a demineralizer (Pure100/500) is present, replace the filter elements.
E003	The feed tank contains water of very poor quality.	Do a RESET following the instructions. IMMEDIATELY empty the feed tank and refill it with distilled water of adequate quality (<15µ s/cm). If an automatic filling system is present, IMME-DIATELY empty the external container and fill it with water of adequate quality. If a demineralizer (Pure100/500) is present, IMMEDIATELY replace the filter elements. **NOTE** IN THESE CONDITIONS, THE STERILIZER ALLOWS STARTING A MAXIMUM OF 5 CONSECUTIVE CYCLES, AFTER WHICH IT LOCKS UNTIL THE TANK IS FILLED WITH DISTILLED WATER OF ADEQUATE QUALITY (<15M S/CM). THIS PRECAUTION IS NECESSARY TO PREVENT POSSIBLE DAMAGE TO THE DEVICE.
E010	Door open (or **not** properly closed) at program start (**START**).	Do a **RESET** following the instructions. Properly close the doorand restart the program.
	Door position microswitch failure.	**Contact Technical Service(see Appendix).**
E020	Door lock mechanism limit microswitch failure.	Do a **RESET** following the instructions.Try restarting the program a second time. If the problem persists, **contact Technical Service (see the Appendix)**.
	Door lock system gearmotor failure.	
E021	Door lock mechanism limit microswitch failure.	Do a **RESET** following the instructions. **Contact Technical Service(see Appendix).**.
	Door lock system gearmotor failure.	
E030	Water level in the feed tank below minimum.	Do a **RESET** following the instructions. Top up with water up to the MAX level (or at least up to over the MIN level).

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
	MIN water level sensor failure.	**Contact Technical Service(see Appendix).**
E031	Water level in the drain tank over the MAX level	Do a **RESET** following the instructions and empty the tank. Completely drain the drain tank.
	MAX water level sensor failure.	**Contact Technical Service(see Appendix).**
E040	No water in external container (automatic filling)	Do a **RESET** following the instructions. Fill the container with a sufficient amount of water (**re-member to periodically check the level**).
	Automatic filling system **not** properly installed.	Do a **RESET** following the instructions. Check that the filling tube is properly connected. Remove any obstruction along the tube path..
	Automatic filling system failure.	**Contact Technical Service(see Appendix).**
E041	Automatic filling system **not** properly installed.	Do a **RESET** following the instructions. Check that the filling tube is properly connected (see the section **Installation**). Remove any obstruction along the tube path.
	Automatic filling system failure.	**Contact Technical Service(see Appendix).**
	Problem in the hydraulic circuit.	
E260	Drain filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit.	Contact Technical Service (see **Appendix**).
E261	Bacteriological filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit	Contact Technical Service (see **Appendix**).
E900	Air seepage through the gasket	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moiste-ned with water.Restart the program.
	Problem in the hydraulic circuit.	**Contact Technical Service(see Appendix).**
E901	Excessive humidity in the sterilization chamber.	Do a **RESET** following the instructions. Thoroughly dry the inside of the chamber and restart the program.
	Air seepage through the gasket	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moi-stened with water.Restart the program.
	Problem in the hydraulic circuit.	**Contact Technical Service(see Appendix).**
E902	Excessive humidity in the sterilization chamber.	Do a **RESET** following the instructions.Thoroughly dry the inside of the chamber and restart the program.
	Air seepage through the gasket	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moiste-ned with water. Restart the program.
	Vacuum pump failure.	**Contact Technical Service(see Appendix).**
	Problem in the hydraulic circuit.	
E999	**Manual interruption** of the sterilization or test cycle.	Do a **RESET** following the instructions.

ALARMS (CATEGORY A)

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
A022	Door lock mechanism limit microswitch failure.	**Contact Technical Service(see Appendix).**
A032	Water level sensor connector not connected.	
	Water level sensor failure.	
A101	Chamber temperature sensor failure (PT1).	**Contact Technical Service(see Appendix).**

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
A102	Steam generator temperature sensor failure (PT2).	
A103	Heating element temperature sensor failure (PT3).	
A105	Temperature sensor PT5 failed (conductivity measurement compensation)	
A111	Incorrect temperature sensor connection (sterilization chamber).	
	Temperature sensor short-circuit (sterilization chamber).	
A112	Incorrect temperature sensor connection (steam generator).	
	Temperature sensor short-circuit (steam generator).	
A113	Incorrect temperature sensor connection (heating element).	
	Temperature sensor short-circuit (heating element).	
A115	Temperature sensor PT5 short-circuited (conductivity measurement compensation)	
A116	ADC error	**Contact Technical Service(see Appendix).**
A120	Reference heating element acquisition chain fault	
A121	Reference heating element acquisition chain fault	
A122	Reference heating element acquisition chain fault	
A123	Reference heating element acquisition chain fault	
A125	Reference heating element acquisition chain fault	
A201	Steam generator safety thermostat intervened.	
	Steam generator or heating element mal-function.	
A202	Heating element safety thermostat intervened.	**Contact Technical Service(see Appendix).**
	Steam generator or heating element mal-function.	
A203	Steam generator malfunction	
A204	Heating element malfunction	
A250	Water or condensate in the sterilization chamber.	Do a **RESET** following the instructions. Thoroughly dry the inside of the sterilization chamber and restart the cycle. Do not insert material impregnated with water or liquids in general into the chamber.
	Drain filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Air seepage through the gasket.	Do a **RESET** following 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.	
A251	Water injection pump malfunction.	**Contact Technical Service(see Appendix).**
	Problem in the hydraulic circuit.	
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
A252	Steam seepage through the gasket.	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the cycle.
	Excessive load.	Do a **RESET** following the instructions.Check that the load does not exceed the maximum values permitted. (see Summary Table in the **Appendix Technical Features**).
	Problem in the hydraulic circuit.	**Contact Technical Service (see Appendix).**
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	
A353	Drain filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit	Contact Technical Service (see **Appendix**).
A253	Water or condensate in the sterilization chamber.	Do a **RESET** following the instructions. Thoroughly dry the inside of the sterilization chamber and restart the program. **Do not** insert material impregnated with water or liquids in general into the chamber.
	Air seepage through the gasket.	Do a **RESET** following 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.	
A254	Water injection pump malfunction.	**Contact Technical Service (see Appendix).**
	Problem in the hydraulic circuit.	
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	
A255	Steam seepage through the gasket.	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water. Restart the program.
	Excessive load.	Do a **RESET** following the instructions. Check that the load does not exceed the maximum values permitted. (see Summary Table in the **Appendix Technical Features**).
	Problem in the hydraulic circuit.	**Contact Technical Service (see Appendix).**
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	
A356	Drain filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit.	Contact Technical Service (see **Appendix**).
A256	Water or condensate in the steriliza-tion chamber.	Do a **RESET** ollowing the instructions. Thoroughly dry the inside of the sterilization chamber and restart the program. **Do not** insert material soaked with water or liquids in general into the chamber.
	Air seepage through the gasket.	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with wa-ter. Restart the program.
	Vacuum pump failure.	**Contact Technical Service (see Appendix).**
	Problem in the hydraulic circuit.	
A257	Water injection pump malfunction.	**Contact Technical Service (see Appendix).**
	Problem in the hydraulic circuit.	

CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	
A258	Steam seepage through the gasket.	Do a **RESET** following the instructions. Thoroughly clean the gasket with a clean cotton cloth moistened with water and restart the program.
	Excessive load.	Do a **RESET** following the instructions.Check that the load does not exceed the maximum values permitted. (see SUMMARY TABLE in the **Appendix TECHNICAL FEATURES**).
	Problem in the hydraulic circuit.	**Contact Technical Service (see Appendix).**
	Steam generator safety thermostat intervened.	
	Steam generator malfunction	
A260	Drain filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit.	Contact Technical Service (see **Appendix**).
A261	Bacteriological filter obstructed.	Clean the drain filter (see the **Appendix "MAINTENANCE"**).
	Problem in the hydraulic circuit.	Contact Technical Service (see **Appendix**).

HAZARDS (CATEGORY H)

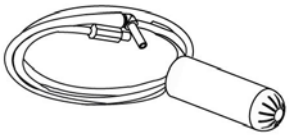
CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
H150	Pressure sensor (MPX) failure.	**Contact Technical Service(see Appendix).**
H160	**Pressure sensor** (MPX) not properly connected to the connector.	
	Pressure sensor (MPX) short-circuit.	
H400	Problem in the hydraulic circuit.	
H401	Problem in the hydraulic circuit.	
H402	Steam generator malfunction.	
	Problem in the hydraulic circuit.	
H403	Steam generator malfunction.	
	Problem in the hydraulic circuit.	
H404	Problem in the hydraulic circuit.	
	Steam generator malfunction.	
H405	Problem in the hydraulic circuit.	
	Steam generator malfunction.	
H406	Problema nel circuito idraulico.	
	Steam generator malfunction.	
H410	Timer problem	
H990	General operating problem.	
H991	General operating problem.	
H992	General operating problem.	
H993	General operating problem.	

SYSTEM ERRORS (category S)

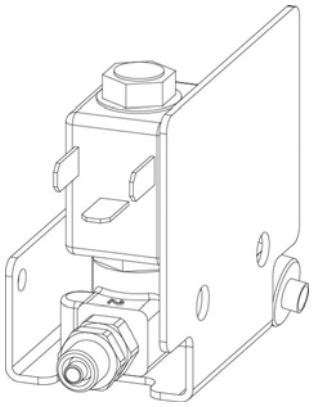
CODE	POSSIBLE CAUSE	SUGGESTED SOLUTION
S001	Flash memory not accessible.	**Contact Technical Service(see Appendix).**
S002	Flash Full.	
S003	SD Card not accessible	
S004	SD Card full	
S005	USB stick not accessible	
S006	USB Stick not accessible	
S007	USB stick full	

APPENDIX - ACCESSORIES

AUTOMATIC FILLING



H2O AUXILIARY SOLENOID VALVE



For management of the automatic fllling accessories, refer to the previous section WATER FILLING and to the Accessory Manual.

PRINTER

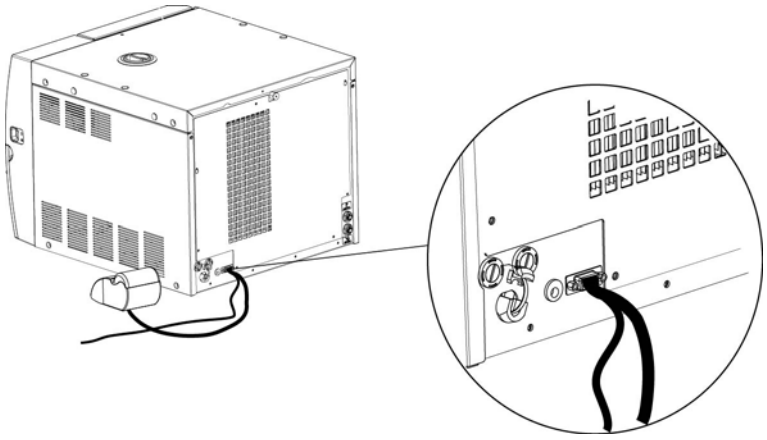
For printer connection, refer to the section "PRINTER".

NOTE

NOT INCLUDED IN THE PACKAGE OF THE MACHINE.

PRINTER CONNECTION

Connect the printer to the RS232 serial port located on the rear of the autoclave (see fIgure).



Load the desired type of paper and turn on the printer.
Set the type of paper loaded (see the paragraph PRINT MANAGEMENT).

NOTE

REFER TO THE PRINTER MANUAL FOR PRINTER STARTING AND PAPER LOADING.

APPENDIX - TECHNICAL SERVICE

FOR ANY REQUEST FOR

TECHNICAL SERVICE FOR THE

PRODUCT,

WHETHER IN OR OUT OF

WARRANTY,

DIRECTLY CONTACT THE

TECHNICAL SUPPORT DEPARTMENT

OF 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 steam sterilization procedures.

In this regard, please refer to the following address:

www.castellini.com