



Cristófoli, Brazilian importing company and manufacturer of health products certified by ISO 13485 - Health Products - Quality Management System - Requirements for Regulatory Purposes and compliance with RDC 665/2022 - *BPF - Boas Práticas de Fabricação - ANVISA requirements.



Vitale 12/21 Autoclave

CRISTÓFOLI'S MISSION

To develop innovative solutions to protect life and promote health.

CRISTÓFOLI QUALITY AND ENVIRONMENTAL POLICY
















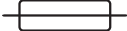
Cristófoli Equipamentos de Biossegurança Ltda., established at Rua São José, 3209, Área Urbanizada II in Campo Mourão, Paraná, Brazil, manufactures biosafety equipment to assist the health care, having the following policy: "To develop innovative solutions for health care by using agile, robust, and objective processes to better serve its customers. To fulfill all the requirements of the applicable standards, promote the continuous improvement of its quality and environmental standards, prevent pollution, reduce its environmental impact, and continuously train its staff, achieving, therefore, a sustainable and profitable maximization of its value." Rev. 2.

*BPF: Brazilian standard similar to GMP - Good Manufacturing Practices (FDA / US)

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MEANING OF SYMBOLS

	Warning		Grounding Protection Terminal		Recyclable
	Autoclavable		Lot number		Fragile - handle with care
	Alternating Current		Serial Number		Maximum Pile
	Dangerous Electrical Tension		Keep out of Sunlight		Keep Dry
	Date of Manufacture		This side up		
	Manufacturer		Fuse		

INTRODUCTION

The complete reading of this manual is indispensable for safe use of the equipment and preventive maintenance orientation.

Autoclaves work with high temperature and pressure, so must be handled by health care professionals, well aware of the equipment operation.

Box content: 1 autoclave, 1 tray holder, 2 trays (Vitale 12) or 3 trays (Vitale 21), 1 cup, 1 hose (1,5 m), 1 clamp, and 1 manual.

INTENDED USE

This equipment was developed for sterilization of packed and unpacked heat-resistant articles/instruments using saturated steam under pressure.

RECOMMENDATIONS AND WARNINGS

- ▶ Read all instructions of this manual before using your autoclave. The incorrect use may result in sterilization failure and/or accidents.
- ▶ For your safety, when performing any kind of maintenance, remember to unplug the power cord and use PPE (Personal Protective Equipment).
- ▶ Do not allow patients, especially kids, to get close to your autoclave.
- ▶ Before starting any sterilization program, make sure that the sterilization load is autoclavable (resistant to temperatures up to 135 °C under presence of steam and pressure).
- ▶ During the autoclave operation, it's perfectly normal to hear noises, which are generated by the valve opening, closing, deaerating, and depressurizing. These processes are part of the proper functioning of the equipment. Cristófoli is not responsible for accidents that might occur due to the jolts caused by the noises produced by the autoclave.
- ▶ When pulling the handle to open the door, the operator must do it easily. **Never use too much force**, for it may damage the equipment's internal mechanisms.
- ▶ To ensure proper drying, it's essential for the operator to partially open the door. Refer to "*How to Use the Vitale Autoclave*" (Page 10, item f).
- ▶ It is normal, when the operator opens the door at the end of the cycle to cool down the sterilized load, that some steam comes out of the chamber (pressure vessel).
- ▶ The owner is responsible to perform, through a competent Laboratory, the thermometric validation of the autoclave.
- ▶ Use totally perforated boxes and trays only, as it allows steam circulation and makes the drying process more efficient.
- ▶ Perform tests with biological indicators on your autoclave upon first use, routine (daily, weekly, or in accordance with the legislation of your state or city for your type of service) and after preventive or corrective maintenance.
- ▶ It is recommended that the equipment be unplugged at the end of the workday.
- ▶ **Never** sterilize or heat foods.

MANUFACTURER

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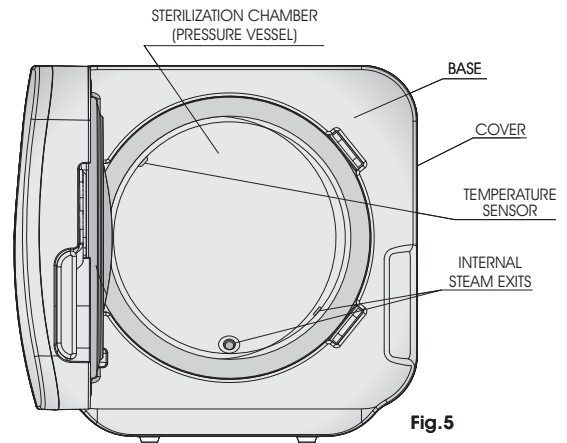
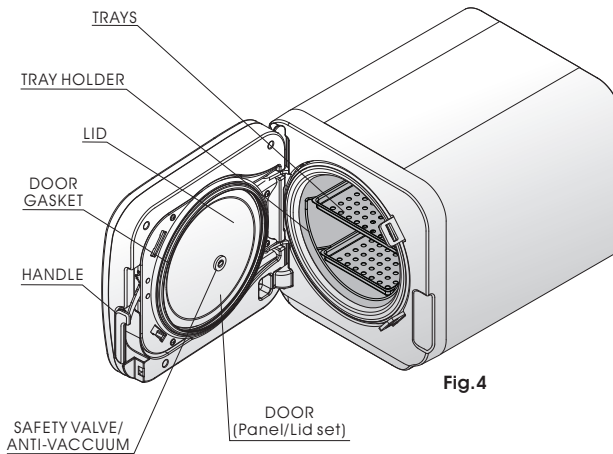
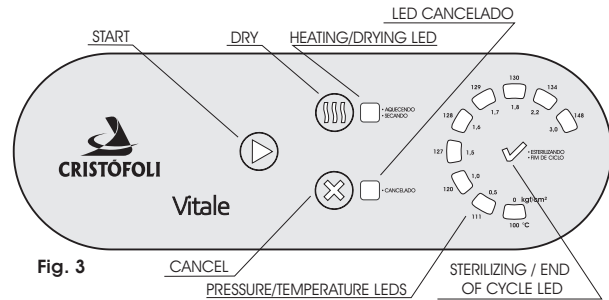
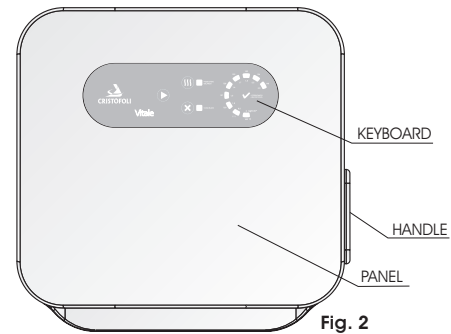
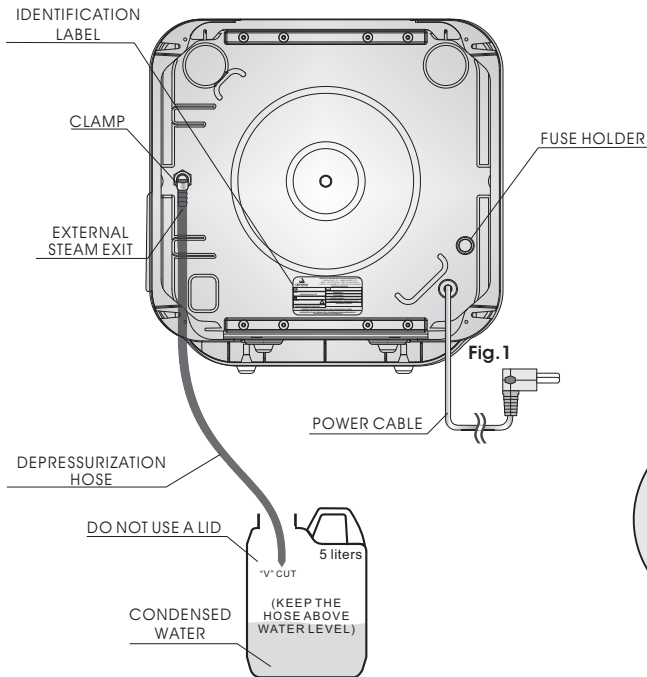
Responsible Technician

Eduardo Luiz Soppa

CREA-PR: 109201/D

HOW TO IDENTIFY YOUR AUTOCLAVE

⚠ The Identification label removal will cause automatic loss of warranty.



Images for illustrative purposes only

The manufacturer reserves the right to make changes and/or improvements to this product at any moment without prior notice

INSTALLATION INSTRUCTIONS

The equipment must always be carried by two people to prevent it from falling down. The storage/installation must be performed indoors, under room temperature, on a counter that can bear the weight of the autoclave.


Install the autoclave in a room that is exclusive for sterilization.

Install the autoclave on a flat, levelled and firm surface, and at a proper height for the operator to handle it (approximately 80 cm / 2.6 feet from the floor). Leave enough room around the autoclave for proper handling of the sterilization load.

ELECTRICAL INSTALLATION

See "How to Proceed When Service is Needed" (Page 14). If the owner performs the installation with a non-authorized electrician or technician, Cristófoli will not be responsible for services done in disagreement with the orientations described in this manual.

- 1► The Vitale autoclave is an automatic dual voltage device (able to operate at 127 and 220 V), as shown in the identification label, placed on the back of the equipment. See "How to Identify Your Autoclave" (Fig. 1, page 5).
- 2► For installation, use a grounded outlet (20 A), plugging phase/neutral or phase/phase at the side pins and grounding at the middle pin: **Never plug the grounding on neutral.**

 The Electrical Grounding is very important for the operator's safety and for your equipment's functionality. Therefore, the center pin (grounding) must **never** be removed or cut. **The failure to observe this procedure may damage your autoclave and cause loss of warranty of your equipment.** Install the equipment where the power cable can be easily disconnected.

3► **Never** use electric extensions, adapters or voltage transformers.

4► For the proper functioning of the autoclave, the electrical wire must be stable, in other words, without oscillations. **It is mandatory the use of an exclusive circuit breaker for the outlet where the autoclave will be installed.** If after following all the specifications, the electrical wire still oscillates, contact the local electricity company.


The electrical installation must follow the data from table below.

AUTOCLAVE	NOMINAL CURRENT	CIRCUIT BREAKER	VOLTAGE	WIRING GAUGE
Vitale 12	9,5 A	15 A	127 V / 220 V	connect the equipment, use 2,5 mm wiring. From 5 to 15 m (16 to 46 ft) use 4 mm, and from 15 to 50 m (46 to 164 ft) use 6 mm.
Vitale 21	12,6 A	20 A		

Table 1

DRAINAGE





Connect the provided hose to the external steam exit (Fig. 1, page 5), put the clamp and fasten it with a screwdriver. The other side must be connected on a pipe that is able to tolerate depressurizing temperature, or to an open and empty container, placed about 40 cm above the autoclave level. The hose must have a "**V**" cut at its end (Fig. 1, page 5). Keep the hose slightly stretched to avoid it from bending. Empty the container when the water reach the hose and wash it with water and biodegradable neutral detergent.

 If a hose change is needed, use only heat resistant rubber hose (5/16", 300 psi as sample provided).

AUTOMATIC ALTITUDE ADJUSTMENT

The performance of the autoclave is directly related to the atmospheric pressure, which varies according to the altitude of where it is installed. The following instructions will guide you on how to perform the Initial Cycle of your autoclave. This reinforces that your autoclave will efficiently work at the location where it is installed.

When turning the autoclave on for the first time, the 7 first LEDs of the temperature/pressure LED bar will keep alight (Fig. 6), showing the need to perform the altitude adjustment, that is the first cycle of the autoclave. Perform the adjustment **with empty chamber (no materials, trays or tray holder)**, following the instructions below:

- 1► Open the door of the autoclave and, using the cup, put the correct amount of **distilled water** directly inside the chamber (pressure vessel), **until the water reaches the "water level" mark**. Close the door and press  to begin.
- 2► During the heating process, the **heating/drying** LED will light up and the 7 LEDs (Fig. 6) will blink. The whole process will be performed automatically in at most 15 minutes. At the end, the LED  will light up, announcing the end of the adjustment.
Press  to return. Open the door and wait the chamber (pressure vessel) cool down to use (15 minutes, approximately).
Note: If there are any problems during the adjustment, press  to repeat. See "Failure Indications" (page 10) following the recommendations related to the shown failure message.

 If the equipment is **transferred from location (building, city or state) or undergoes technical maintenance**, see the topic "Performing a New Automatic Altitude Adjustment" (page 11) to perform a new Altitude Adjustment.

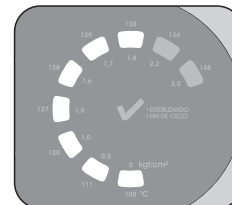


Fig.6

SAFETY DEVICES

The **Vitale** autoclave has the following safety devices:

- 1► **FUSE** - This device protects the electrical installations and equipment against peaks of energy. The used fuse is the glass 6,35x32 AGLF, fast acting. If substitution is needed, see "*Fuse Replacement*" (page 13).




AUTOCLAVE	AC VOLTAGE	FUSE
Vitale 12	95 V - 254 V	10 A (250 V)
Vitale 21	95 V - 254 V	15 A (250 V)

Table 2

- 2► **DOOR KEY** - Internal device that prevents the functioning of the equipment if the door is not properly closed.
- 3► **TEMPERATURE VS PRESSURE DATA CROSSING ELECTRONIC SYSTEM** - Internal system that automatically cancels the cycle if any problem is detected with pressure reading.
- 4► **DOOR LOCKING** - Internal device which prevents the handle from opening if there are high pressure levels inside the chamber (pressure vessel).
- 5► **POWER CONTROL ELECTRONIC SYSTEM** - Internal system that monitors the voltage fluctuation, keeping the autoclave power constant.
- 6► **THERMOSTAT** - Internal device that limits the excessive heating of the chamber (pressure vessel).
- 7► **DOOR GASKET** - If the pressure inside the chamber (pressure vessel) reaches 3 kgf/cm² (294 kPa), the door gasket will detach from the edge of the door, having a loud noise (Fig. 4, page 5).
- 8► **SAFETY VALVE/ANTI-VACCUUM** - Device that, when needed, eases the vacuum inside the chamber (pressure vessel). It also eases the pressure if it exceeds the limits established (Fig. 4, page 5).

HOW TO USE THE VITALE AUTOCLAVE

- a► Connect the power cable to an outlet and press , the Cristófoli logo will light up beeping 3 times, then the LED that shows the voltage the equipment is working will light up (1,7 kgf/cm² to 127 V and LED 1,8 kgf/cm² to 220 V), as the LED that indicates the capacity also lights up (0 kgf/cm² to 12 L and 0,5 kgf/cm² to 21 L).
- b► Open the door of the autoclave, take out the trays and, using the cup, put the correct amount of distilled water directly inside the chamber (pressure vessel) before each cycle (Fig. 7), **until the water reaches the "water level" mark** (Fig. 7).

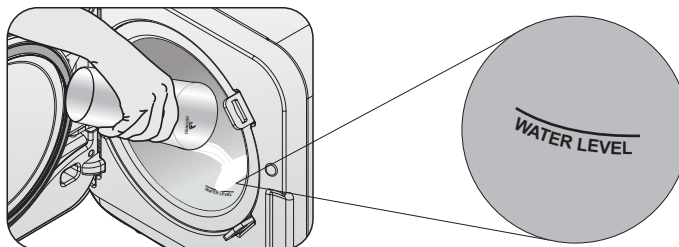


Fig.7


 **Use only distilled water for sterilization.** The non-compliance of this recommendation may cause obstruction of the autoclave's hydraulic system (internal pipes e/or valves), stains on the instruments, and loss of warranty.



- c► Load the autoclave with the materials to be sterilized, be careful to not lean them against the chamber (pressure vessel) walls or internal steam exits, failure to follow these instructions may interrupt the sterilization cycle. **Do not overload the autoclave**, the amount of articles to be sterilized must not exceed 1,2 kg for Vitale 12 liters, and 2,1 kg for Vitale 21 liters (table 3). **Place the envelopes always with the paper side upturned**, it eases the steam penetration, resulting on a fast and efficient drying process, and for the same reason, **boxes and trays** must be **totally perforated**, so that allows steam circulation and makes drying easier.

CHAMBER (PRESSURE VESSEL) MAXIMUM CAPACITY					
MODEL	USING TRAYS	USING 1 SUPPORT	USING 2 SUPPORTS	MAX. WEIGHT (PACKED AND UNPACKED INSTRUMENTS)	MAX. WEIGHT (COTTON)
VITALE 12	5 envelopes (10 x 23 cm)*	13 envelopes (10 x 23 cm)*	-	1,2 kg	0,5 kg
VITALE 21	12 envelopes (10 x 23 cm)*	13 envelopes (10 x 23 cm)	26 envelopes (10 x 23 cm)	2,1 kg	1,0 kg



*Each envelope with 6 instruments at most. **The supports are sold separately. Contact your local dealer.

Table 3

- d► Close the door of the autoclave pressing it against the chamber (pressure vessel) and move the handle all the way down (Figures. 8 and 9).
- e► Press  to start, the autoclave will beep once, and the LED **Aquecendo/Secando** (Heating/Drying) will be on, announcing the heating process, that may last between 10 and 60 minutes, depending on temperature, altitude, electrical wire, and amount of instruments (table 4). During the functioning, the LEDs will show the increasing and decreasing of pressure and temperature.

 If when pressing  the autoclave beeps continuously, it means the door is not properly closed. Open and close the door **correctly**, as shown in the figures 8 and 9.

 If the autoclave beeps 3 times, light on **Aquecendo/Secando** (Heating/Drying), **Cancelado** (Canceled), and the 7 first temperature/pressure LEDs, it means the operator needs to **open and close the door again**.

 If this is not the first cycle of the day and the temperature inside the autoclave is above 70 °C, when pressing , 2 beeps will continuously sound, and the autoclave will keep on standby mode, with the Cristófoli logo on. Wait some minutes until the temperature of the chamber (pressure vessel) decreases and try again.

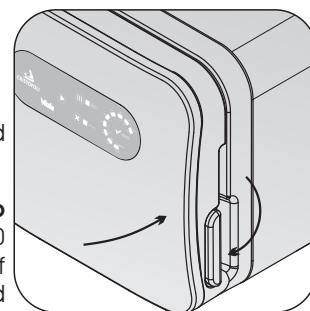


Fig. 8

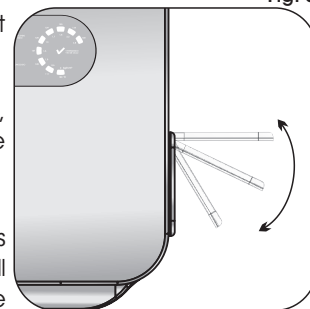


Fig. 9

The table below shows the default values of the sterilization cycle:

PROGRAMS	HEATING TIME	STERILIZATION TEMPERATURE	STERILIZATION PRESSURE	STERILIZATION TIME	DRYING TIME
Default program	10 a 60 min.	129 a 132 °C ou 264 a 269 °F	1,7 a 1,8 kgf/cm² ou 167 a 186 kPa	16 min.	40 min.
Extra drying	-----	-----	-----	-----	15 min.
Maximum drying temperature: 129°C					

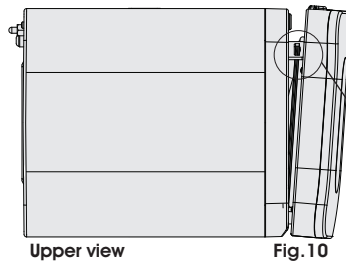
Note: According to ABNT NBR 11816: 2003, the sterilization temperature interval must have the inferior limit defined by the sterilization temperature and superior limit of + 3°C.

Table 4

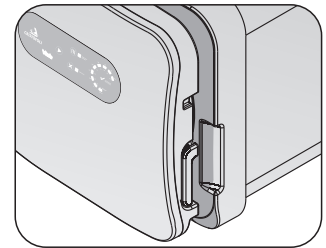
- e► When the autoclave reaches the sterilization temperature/pressure, it will beep once and the LED ✓ will blink indicating the sterilization for 16 minutes (table 4).

If a cycle interruption/cancellation is needed, press (X). In this case, the LEDs **Cancelado** (Cancelled) and **0,5 kgf/cm²** will be on, the autoclave will beep twice and return to the standby mode.

- f► At the end of the sterilization, the equipment will beep once, announcing depressurizing. The pressure LEDs will indicate 0 pressure at the end of this process. After that, the heating/drying LED will blink with 2 beeps every 4 seconds, indicating the need to slightly open the door, for a proper drying (figures 10 and 11).



ATTENTION!
When opening the autoclave for drying, see the correct position of the door (figures 10 and 11); keep the handle all the way down (fig. 11). Vitale performs drying **with open door**. It is usual that in this moment, some steam comes out through the door.



ATTENTION! Even after the cycle is finished, the chamber (pressure vessel) content will be still at high temperature **Never** directly touch the chamber, trays or material, wait until the temperature is proper for handling. Remember to use glove for security and thermal protection. **Wait between 15 and 20 minutes for cooling before start a new cycle.**

- g► After drying, the autoclave will beep once and the ✓ LED will keep on. To return to the standby mode, press (X).
If a extra drying is needed, press (III) to perform this process again.

- h► After use, turn off the equipment pressing (X) for 2 seconds.

FAILURE INDICATIONS

When a cycle is canceled, the Vitale autoclave will light up a LED related to the possible cause of canceling and the Cancelado (Canceled) LED, according to the table below:

LED	CAUSE
0/100	The door was opened, press (X) to return.
0,5/111	Canceled by user, press (X) to return.
1,0/120	Heating time limit, press (X) to return.
1,5/127	Low pressure, press (X) to return.
1,6/128	Over pressure, press (X) to return.
1,7/129	Incompatible tension level, press (X) to return.
1,8/130	Cancelled by lack of power, press (X) to return.

Table 5

PERFORMING A NEW AUTOMATIC ALTITUDE ADJUSTMENT

If the equipment is transferred from location (building, city or state) or undergoes technical maintenance, perform the Altitude Adjustment again. To start this procedure again, follow the instructions below:




- 1► Open the door of the autoclave, and, using the cup, pour the correct amount of **distilled water** inside the chamber, **until the water reaches the “water level” mark**, close the door, **press and hold**  until the LEDs begin to blink (about 7 seconds) as shown at Fig. 12. If the autoclave beeps **continuously** when pressing  , it means the door was not correctly closed, open and close it again.
- 2► During heating, the LEDs indicated at Fig. 12 will blink. The entire process is automatically performed. At the end of the process, the  LED will indicate that the adjustment was successfully performed.



Fig.12

TECHNICAL DATA CHART

	Vitale 12	Vitale 21
Capacity	12 liters	21 liters
Net weight	17,8 kg	23,4 kg
Gross weight	19,5 kg	26,0 kg
Material of the chamber (pressure vessel) / lid	Stainless Steel	Stainless Steel
Chamber internal dimensions (W x D)	21,6 x 33,7 cm	24,6 x 45,2 cm
Autoclave external dimensions (W x H x D)	35,3 x 35,3 x 51 cm	38 x 38 x 59 cm
Dimensions of the trays (W x H x D)	15,5 x 1,2 x 28 cm (small) 20 x 1,2 x 28 cm (large)	19 x 1,2 x 38 cm (single size)
Free space between trays	67 mm (approximate value)	28,5 mm (approximate value)
Voltage (Automatic dual voltage)	127 V / 220 V AC (95 - 254 V)	127 V / 220 V AC (95 - 254 V)
Frequency	50/60 Hz	50/60 Hz
Power	1200 Watts	1600 Watts
Power consumption	0,424 Kilowatts/hour	0,623 Kilowatts/hour
Maximum operation pressure	216 kPa (2,2 kgf/cm²)	216 kPa (2,2 kgf/cm²)
Temperature of drained water	100 °C	100 °C
Proper room temperature	From 15 °C to 40 °C	From 15 °C to 40 °C
Proper working altitude	Up to 3500 m	Up to 3500 m
Base (metal structure)	Carbon Steel	Carbon Steel
ANVISA register	10363350017	10363350017
Fluid class	C (water steam)	C (water steam)
Potential risk group	5 (PxV < 1)	5 (PxV < 1)
Pressure vessel category	V	V
Class	S	S
Certification	The Vitale Autoclaves are manufactured by Cristófoli Biossegurança, company whose the Quality Management System is certified by ISO 13485, and in accordance with RCD 665/2022 - BPF - Boas Práticas de Fabricação - ANVISA (Brazilian standard similar to GMP - FDA/US).	

Table 6

QUALITY CONTROL

The Vitale autoclaves are individually monitored according to the physical parameters of the Table 4 (Page 9) and tested with class 5 chemical indicators. The tests with biological indicators are done by lot sampling.

Pressure Vessel Serial Production following the highest quality standards recommended in the quality technical regulation and conformity evaluation requirements for Boilers and Pressure Vessels of Serial Production suggested by INMETRO - Portaria 120/2021.

PREVENTIVE MAINTENANCE / MONITORING

For better functioning and durability of your autoclave, some procedures are needed. Monitoring and preventive maintenance correspond to the **accomplishment of all procedures below**, that must be done periodically by the consumer's costs.

When performing any kind of maintenance, including cleaning, remember to unplug the power cord, including cleaning.



Perform tests with biological indicators on your autoclave after each preventive or corrective maintenance.

PERIODICITY	MAINTENANCE / MONITORING
DAILY	External cleaning: Must be performed with a soft cloth, water and biodegradable neutral detergent. After that, clean the autoclave with a moistened with 70 % alcohol cloth or 1% peracetic acid. The handle must be cleaned the same way before each material removal, after sterilization cycle.
	Tray and chamber (pressure vessel) cleaning: Use a soft nonabrasive sponge with biodegradable neutral detergent and distilled water. To remove the foam use a cloth that does not shed. Finish the cleaning with 70% alcohol or 1% peracetic acid. It's forbidden the use of any descaler product for the cleaning, for the use of this products will damage the chamber, trays, and internal pipes.
	Sterilizing monitoring (chemical test): Perform chemical test daily. To obtain more information about how to perform the chemical tests, consult www.cristofoli.com at the session "Support" of your product or watch the video "Monitorização da Esterilização em autoclaves – Parte 1 – Monitorização Física e Química" on www.youtube.com (CC available).
WEEKLY	Door gasket cleaning: Remove the gasket by pulling it, after that, clean it with a cloth (which does not shed) moistened with water or 70% alcohol. After the cleaning, place the gasket on the lid again.
	Sterilizing monitoring (biological test): Perform biological test every 7 days. To obtain more information about how to perform the chemical tests, consult www.cristofoli.com at the session "Support" of your product or watch the video "Monitorização da Esterilização em Autoclaves – Parte II – Indicadores Biológicos" on www.youtube.com (CC available).
YEARLY	Verification of the items: door gasket, safety valve/anti vacuum, thermal grease of the electrical resistance, internal hoses, door locking, and external (drain hose). See "How To Proceed When Service Is Needed" (Page 14).
EVERY 10 YEARS	Replacement of the components "lid" (Fig. 4, page 5) and "chamber (pressure vessel)" (Fig. 5, page 5). See "How To Proceed When Service Is Needed" (Page 14).

Table 7

FUSE REPLACEMENT



 To replace the fuse (Fig. 1, page 5), use only fuses that doesn't contain ferrous alloy. Verify using a magnet, the fuse must not be attracted by it. The non observing of this recommendation will cause **loss of warranty of the autoclave**. The used fuse is 6,35x32 AGLF Glass, Fast Action. For Vitale 12, use a 10 A (250 V) fuse, and for Vitale 21, use a 15 A (250 V) fuse.

TROUBLESHOOTING





For any replacement of parts, contact your local dealer or authorized technical assistance office. It's **not recommended** the replacement by non-qualified people.

Listed below are the most frequent problems and possible solutions, which could be solved by the user.

THE AUTOCLAVE DOES NOT SWITCH ON

POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • Lack of power ----- • The autoclave is not connected to the outlet ----- • The  key was not pressed to turn the autoclave on ----- • Blown fuse ----- 	<ul style="list-style-type: none"> • Verify if there's a power failure in your area. • Connect the power cord to the outlet properly. • Press . • Replace the fuse, that is located near to the power chord: unplug the autoclave, remove the cover of the fuse-holder, take out the damaged fuse, put the new one, replace the cover and turn on the equipment.

THE AUTOCLAVE SWITCHES ON BUT DOES NOT HEAT UP

POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • The operator selected the program but didn't press  ----- • When pressing , all the LEDs blink 3 times ----- • The operator selected the program but there's no actuation when pressing  ----- • Incompatible Voltage ----- 	<ul style="list-style-type: none"> • Press . • See "How To Use The Vitale Autoclave" (page 9, item e), if the problem persists, see "How To Proceed When Service Is Needed" (page 14). • See "How To Proceed When Service Is Needed" (pág 14). • In this case, when turning the equipment on, the LEDs Cancelado (Canceled), Aquecendo/Secando (Heating/Drying) and the LED that indicates capacity will be alight (1,7 kgf/cm² for 127 V and 1,8 kgf/cm² for 220 V).

THE AUTOCLAVE PRESSURE GETS TOO HIGH, ACTIVATING THE SAFETY DEVICES

POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • Obstruction of the hose connected to the external steam exit ----- 	<ul style="list-style-type: none"> • Remove the hose that is connected to the external steam exit and clear any obstruction. ATTENTION! Never use common plastic hose. I, see "Installation Instructions" topic "Drainage" (pág 6). If the problem persists, consult "How To Proceed When Service Is Needed" (page 14).

THE AUTOCLAVE SWITCHES ON, HEATS, BUT DO NOT BUILD UP PRESSURE


POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • Equipment installed in higher altitudes ----- 	<ul style="list-style-type: none"> • Perform a new Automatic Altitude Adjustment, see "Performing a New Automatic Altitude Adjustment" (Page 11).

If the problem persists after the verification of all items, contact your local dealer.

THE AUTOCLAVE TAKES TOO LONG TO BUILD UP PRESSURE OR DOES NOT KEEP IT, SHOWING “CYCLE CANCELLED”

POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • There is voltage fluctuation ----- • Pressure/steam leak through the door gasket ----- • Overloaded chamber (pressure vessel) ----- 	<ul style="list-style-type: none"> • Consult your local energy provider. • Perform “Preventive Maintenance /Monitoring” (page 12). • See “How to Use the Vitale Autoclave” (page 8).

AFTER A DEPRESSURIZING, THE HANDLE IS STUCK

POSSIBLE CAUSES	SOLUTION
<ul style="list-style-type: none"> • There's a small amount of pressure in the chamber (pressure vessel) that is triggering the door lock ----- 	<ul style="list-style-type: none"> • Press  to open the valve. If the problem persists, consult “How To Proceed When Service Is Needed” (page 14).

If the problem persists after the verification of all items, contact your local dealer.

HOW TO PROCEED WHEN SERVICE IS NEEDED

If any eventual problem happens with your equipment, see the topic “Troubleshooting” (page 13). If the problem persists, please have in hands the model of your autoclave, voltage, serial number, and the date of manufacture, found in the identification label located in the back of the autoclave (Fig. 1, page 5) , and a description of the problem. Next, contact your local dealer for an evaluation and possible repair your equipment. It will be also necessary to have the original invoice from your dealer to confirm the date of purchase.

Always contact your local dealer. If you have problems contacting your dealer, contact us through our website: www.cristofoli.com.

GUIDANCE FOR FINAL DISPOSAL OF THE EQUIPMENT

The environment belongs to everyone, therefore, it is up to each one of us to make decisions that will help in its preservation and reduction of the damages resulting from human activities.

All products have a useful life span, but it is not possible to determine how long is it, as it varies according to the intensity and how the equipment is used or handled. Exception made for the component “lid” which must be replaced every 10 years.

CRISTÓFOLI EQUIPAMENTOS DE BIOSSEGURANÇA LTDA reaffirming its concern for the environment, strongly recommends users of their products to seek the best destination when disposing their equipment or components, taking into account the legislation on material recycling effective in each country.

We advise you to take your equipment to specialized recycling companies that, due to the continuous and fast paced development of new recycling technologies and materials reuse, provide the best way of disposing the equipment. Cristófoli contributes this way to reduce the consumption of non-renewable raw materials.

On behalf of all users, we thank you for your comprehension and cooperation.

WARRANTY TERMS

CRISTÓFOLI EQUIPAMENTOS DE BIOSSEGURANÇA LTDA. warranties the Cristófoli Autoclaves for 01 (one) year against any manufacturing defect from the date of the purchase receipt (provided it contains the serial and lot numbers of the equipment), of which 03 (three) months refer to the legal warranty (established by section II, art. 26, CDC, Brasil) and nine (09) months to the contractual warranty (arranged in art. 50, CDC, Brazil). Visit our website www.cristofoli.com and register your product online.

Travelling costs (based on the distance traveled in km) and the stay of the authorized technician for installation, repair or maintenance (preventive or corrective) **before or after the warranty period** will be responsibility of the buyer/owner as well as the costs related to preventive maintenance, the autoclave sterilization monitoring (tests with biological indicators) and freight charges for shipping the equipment to the authorized technical assistance office for repairs or, if necessary, to the factory itself

If any item from preventive maintenance needs to be replaced, the cost will be responsibility of the owner, for those are parts/products susceptible to wear and tear.




CRISTÓFOLI EQUIPAMENTOS DE BIOSSEGURANÇA LTDA. is not liable for damages / accidents caused by improper use, operation or installation of its products, in this case the equipment will lose its warranty and the repair will be paid by the buyer / owner.

The warranty will be voided in cases of:

- Problems arising from natural causes (such as floods, lightning, etc.).
- Use of non-distilled water for the operation of the autoclave.
- Damage caused by accidents, such as: dents, drops, short circuits, fire, etc.
- Damage caused by humidity, excessive exposure to sun light and salinity.
- Sinister (theft or robbery).
- Improper use / installation of the equipment and/or plugging it into an incorrect voltage outlet.
- Problems due to failure of the power supply and/or building wiring.
- Removal and/or tempering of the serial number shown in the identification label of the product.
- Removal of the power cable center pin (grounding).
- Signs of tampering and/or blotted out data on the purchase or service receipt of the equipment.
- Tampering and/or modification of the equipment.
- Signs of external violation of the product or broken factory seal.
- Problems caused by absence of preventive maintenance, when it is indispensable.
- Melting of the fuse holder due to the use of a fuse with a ferrous alloy, in violation of the manual's recommendation.
- Use of non-original or not acquired at the **CRISTÓFOLI** Authorized Service Network parts.
- Repairs performed by technicians who are not part of the **CRISTÓFOLI** Authorized Service Network.
- Noncompliance with any measure or caution recommended in the instruction manual of the product.

USE INSTRUCTIONS - QUICK GUIDE

 **Read carefully the Instruction Manual**

1. Connect the power cable to an outlet and press  to turn the autoclave on.
2. Open the door and use the cup to pour the correct amount of **distilled water** directly inside the chamber (pressure vessel), **until the water reaches the "water level" mark**.
3. Load the autoclave with the materials to be sterilized and close the door correctly.
4. Press  to start, The autoclave will automatically perform heating, sterilization, depressurization, and drying, according to the table below data. At the end of the drying process, the autoclave will beep until the operator open the door
5. After depressurizing, the autoclave will beep twice every 4 seconds. Slightly open the door for drying. **Note:** if a extra drying is necessary, see the instruction manual.
6. At the end of the process, the  LED will be on. Wait until the temperature of the material decreases to handle it.

PROGRAMS	HEATING TIME	STERILIZATION TEMPERATURE	STERILIZATION PRESSURE	STERILIZATION TIME	DRYING TIME
Default Program	10 to 60 min.	129 to 132 °C or 264 to 269 °F	1,7 to 1,8 kgf/cm ² or 167 to 186 kPa	16 min. *	45 min.
Extra Drying	-----	-----	-----	-----	15 min.
*For altitudes above 2.000 m, the sterilization time is 20 minutes. Maximum drying temperature: 129°C					

The Autoclave is an equipment for steam sterilization, it works with high temperature and pressure. The autoclave must be handled by trained professional and kept at a location with controlled access.

Attention! Perform preventive maintenance on the autoclave according to the instruction manual specifications.
Test your autoclave with biological indicators every 7 days.