



“LABORATORY HIGH TEMPERATURE STERILIZER”

Laboratory & Industrial Application



Infection Control System



Infection Control System



“THE CISA GROUP COMPANY”

COMPANY PROFILE

CISA has been manufacturing and selling sterilization systems for over 60 years for both hospitals and industrial applications for all sterilization needs.

CISA is an Industrial Group which manufactures hospital and industrial machinery having integrated technological production systems with factories in different continents and its headquarters in Lucca, Italy.

Distributor coordination and technical service centres are managed through CISA branches, located in Joinville (Brazil) for Brazil and Latin America, in Amman (Jordan) for Middle East area, and Singapore for Asia,

as well as distributors and sales offices worldwide to ensure a constant presence and complete service in all countries in which CISA operates.

CISA takes part in a very important field, **sterilization**, that is in continuous development. For this reason it has focused its activity on a line of products that includes: infection control solutions, machinery for washing and disinfecting, machinery for high and low temperature sterilization, software systems for management control and medical waste treatments. All the products in the different lines are “made in CISA” from design to manufacture.

Gabriele Pacini
CEO

Cisa - Infection Control System

“WITHIN THE LABORATORY”

WHERE YOU CAN FIND ME

The Laboratory High Temperature Steam Sterilizer CISA (as shown on the legend) according the regulations of the laboratory or industrial application is installed in the clean area with pass through access of the sterile area. There is also a possibility according the request of the client to be installed only in the clean or sterile area.

“Laboratory High Temperature Steam Sterilizer”

Laboratory and Industrial Application



Infection Control System



“DESIGN & INSTALLATION”

THE POWER OF CUSTOMIZATION



CISA steam sterilizers for laboratory and industrial application are customizable in terms of functions and design;

CISA is able to satisfy all the customer needs with multiple machine configurations:

- Single or double-door application; automatic or manual, vertical or horizontal movement door.
- Automatic Loading/Unloading.
- Stainless steel panel closures
- Bio seal
- Rectangular or rounded chambers
- Human interface on load/unload or both sides
- Sanitary tri-clamp piping.
- Direct/Indirect forced cooling. HEPA filter of the vacuum line
- Filters in line sterilization: Air Gap for water disconnection
- Several types of steam production or utilization. From integrated steam generator, integrated clean steam generator to the use of the centralised steam of the facility where the machine is installed.
- High pathogen (HP) system

“STANDARDS & VALIDATION”

The laboratory machines can be designed to work in different applications and following different Laboratory BSL (I,II,III,IV) following GMP, cGMP, GAMP Standards.





SCIENTIFIC, LABORATORY & INDUSTRIAL STEAM STERILIZERS

CISA offers wide range of Special Application Steam Sterilizers for laboratories, research centers, pharmaceutical industries and others. A complete range with a host of innovative concepts make CISA the preferred choice. Flexibility in design, sizes and functions always meets customer requirements and needs.

“LABORATORY STERILIZERS (L) & LAB. HIGH PATHOGEN STERILIZERS (LHP)”

DIFFERENT LAB. CLASSIFICATIONS AND CISA SOLUTIONS, FUNCTION & APPLICATION

As per modern classification of laboratories, based on agents used and applications: the steam sterilizer production must be designed to meet these levels: I,II,III & IV.

Bio Safety	Level Classification:
I	Agents do not cause disease to humans
II	Agents with moderate potential hazard
III	Agents that cause lethal disease for which there is a vaccine
IV	Agents are lethal and vaccines does not exist

“BIO SEAL” STAINLESS STEEL

A permanent stainless steel barrier that prevents contaminants from entering in the clean room. The Bio Seal is mainly used when the standard safety level requires double door sterilizers but sometimes it can be necessary even when the machine has a single door: this permits the autoclave to be recessed in a closed room - where technicians can work without access to the infected area.

The Bio Seal is tested as part of the penetration test between the two areas (loading & unloading) using vacuum leak tests for the rooms or foam test: therefore the Bio Seal must feature full closure, must be welded and provided with gas-proof cable bypass connections.

The autoclave offers the facility to connect the Bio Seal to the peripheral walls of the rooms in order to seal everything, not only the equipment: this Bio Seal is manufactured in stainless steel and can be customized to fit the autoclave and extended to fit the installation area.



“DOUBLE TOUCH SCREEN” CONTROL FROM BOTH SIDES



Double door sterilizers used for laboratory application allow to separate the control of loading and unloading area. For example, this can be a requirement, with high pathogen waste disposal sterilizers where the loading area is the laboratory while the unloading area and the operator are in the safe disposal area. This means that double sided control systems may be needed for the full & safe operation of the machine.

CISA can supply double sided control systems using a touch screen technology with safety systems to prevent any contact between the two sides. Control instructions are customized to give priority for one control side over the other, based on end user definition, and based on standards requirements.

“CONSTRUCTION” HIGHEST QUALITY



For the construction of the machine is used the highest quality of stainless steel. The internal chamber and jacket are manufactured in AISI 316L with the possibility of upgrade in AISI 316 Ti (chrome-nickel-molybdenum-titanium). The frame and front panels of the machines are manufactured using stainless steel 304L. The hydraulic plant and pipes are manufactured using stainless steel 316L. The pressure vessel and steam generator as well all steam pipes are insulated using insulation material with high efficiency that reduces heat loss and stabilizes the temperature inside the pressure vessel to improve the quality of the sterilization cycles.

“CONTROL PANEL”

CLEAR IMAGE

The human interface is based on a modern industrial grade component designed with a smooth surface for hygiene and easy cleaning. The control panel is provided with standard 7" HMI touch screen upgradable to 10", built-in dot matrix printer, optional chart recorder, emergency button, door control buttons, pressure gauges for chamber, jacket or steam generator, and is mounted at ergonomic level position to enable good view and easy control.

As an option the Control panel can be a 9" windows Siemens Touch panel for CFR 21 and AUDIT Trail requirement.

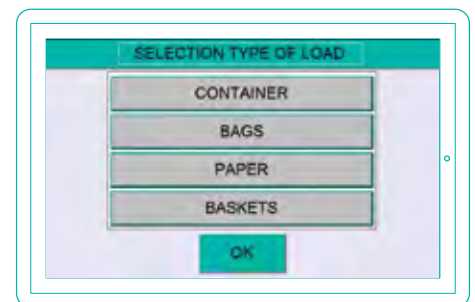
CONTROL SYSTEM & USER INTERFACE

The touch screen gives control to the following functions:

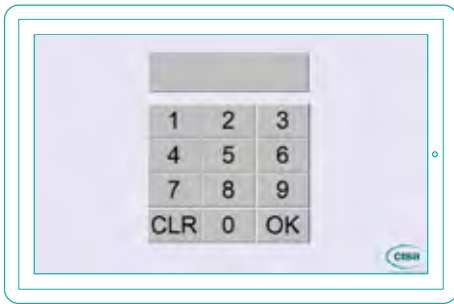
- Selecting cycle and packing type
- Self-check display before starting the cycle and confirmation of the chosen page
- Display of status cycle, parameters (temperature, pressure and time)
- Pages for set-point cycle follow up and real time diagram display
- Audio/visual alarms display with alarm history
- FO Calculation
- Visualization of the last 50 cycles- graphical or value parameters
- Possibility of downloading the cycles on a external USB drive for storage and PC visualization

Maintenance program for preventative maintenance:

- Operators access level control (password protected)
- Calibration & technical pages (password protected)
- Programming of new cycles or modifying standard cycle (password protected)
- Type of steam heating selection
- Programmable automatic
- Start up and shut off time
- Alarm Messages in clear text
- Door open/closure management
- Troubleshooting pages

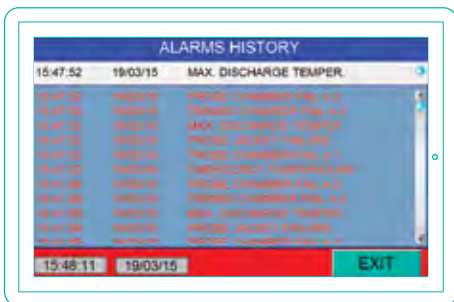


OPERATORS ACCESS LEVEL CONTROL



CISA system allows every operator to have its own identity code by using the pre defined password and access level to which it belongs. The levels can be customized for each operator with access to multiple functions. Operator name will be printed and kept in the system for external storage, or transferred to external supervision/traceability system software. With a CFR 21 system the operator has specified password and all the operations done on the machine (settings, calibration and so on) will be recorded inside the internal memory. For critical parameter modification, the system will ask for the operator to insert the cause of the modification.

ALARMS



Audio and visual alarms are defined for operator warning; the alarms list includes multi-level alarms with clear message notification; alarm levels are configured based on the level of importance to stop the machine or the cycle as well as only a warning notification without affecting the running cycle. The alarm lists are complete for safe and perfect operation for the operators and the machines. The alarms history can display all the alarms that occurred in last 90 days. Alarms are also indicated on unloading side in case of double doors execution. The end of cycle alert is included to alert the user for the finished cycle and the unloading process.

REMOTE MAINTENANCE



The machine, through the Touch Screen, is equipped with a remote access system that allows to be connected to CISA customer service by a simple Ethernet connection. This represent the fastest way for a CISA technician to do a check up of the problem and reduce the down time.

START UP TIME & STAND BY

The machine can be programmed for an early start up and warming as well as an auto vacuum leak test cycle before the early morning staff arrival. There is also the possibility to program an early morning B&D test cycle only if automatic loading is provided. As an advance it is considered the option for stand by and automatic shut off which also can be programmed and no operator presence is necessary.

“TOUCH SCREEN”

MULTI LANGUAGE

Most world languages are pre-installed in the machine. Users can easily choose them from the touch screen, including: English, Italian, French, Spanish, Arabic, Russian, Portuguese, German, Turkish, Polish, Chinese, Greek, Romanian, Korean, Bulgarian and others.

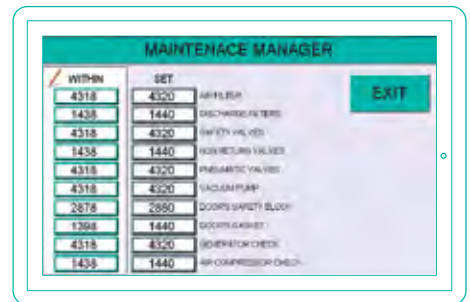


“PROGRAM”

SERVICE & MAINTENANCE

The touch screen is equipped with software pages for periodic preventive maintenance, enabling a safe functioning of the machine, and auto maintenance program for steam generator discharge with user acceptance. Also, there are technical pages for calibration and parameter control.

Easy and friendly troubleshooting pages are added for easy maintenance and service. The maintenance and technical pages are protected with password where only authorized technicians have an access.



“STEAM GENERATOR”

POWERFUL STAINLESS STEEL

The Steam generator is manufactured in stainless steel AISI 316 L with powerful stainless steel elements, and stainless steel water pump and optional break tanks.

The machine can be configured using one of the following solutions concerning steam generator:

- (E): Built-in steam generator electric heating
- (V): External steam supply from hospital steam network (domestic steam).
- (EV): Combination between (E) & (V) which enable the user to select type of heating from touch screen as internal (E) or external (V) without hardware interface.
- (SV): Steam to steam converter to generate medical quality of steam from service steam using the built-in heat exchanging facility.
- (ESV): Combination between (E) & (SV) with same selection method as explained above.

The steam generator is equipped with auto cleaning and flushing for high reliability and better functionality. Steam generator, converter and steam pipes are insulated using thermal insulation material for controlling heat loss.



“STERILIZATION CYCLES”

THINK DIFFERENT

All pre-programmed cycles are validated as per EN285 standards. The customer can also run validation using the included validation ports for customer cycles according to UNI EN ISO 17665-1.

The autoclave has programmed different cycles, depending on its application. The cycles are as follows:



1	Sterilization cycle at 134°C for general porous loads, empty glassware and generally all load that is temperature-proof
2	Sterilization cycle at 121°C for general porous loads, empty glassware and generally all load that is temperature-proof
3	Sterilization cycle at 121°C for liquids with natural cooling
4	Sterilization cycle at 121°C for open bottles or bottles that are not hermetically closed
5	Sterilization cycle at 121°C for bottles that are hermetically closed
6	Sterilization cycle at 121°C for open bottles or bottles that are not hermetically closed
7	Disinfection cycle at 115°C for general porous loads, empty glassware and all load that is temperature-proof
8	Flash cycle at 134°C
9	Flowing steam cycle
10	Inactivation cycle for potential high pathogenic material
11	Steam penetration test cycle (Bowie & Dick)
12	Vacuum leak test
13	Open cycle (from 01 to 60 programmable cycles; must be validated; password protected)

Other cycles can be used for pharmaceutical industry like Crash test cycle
And additional cycle can be added and or validated upon requested.



“CHAMBER”

HIGHT QUALITY

The chamber is made of AISI 316L covered with Non-toxic, fire-resistant insulation foam, with extremely low thermal conductivity and no release of particles.

The chamber is electrically polished up to Ra of less than 0.2 Micron (Mirror finish electrolytic polishing treatment).

All welding of the pressure vessel is robot controlled and checked which guarantees to be homogeneous using advanced control methods.

The chamber is designed to withstand pressure, from absolute vacuum up to +3.5 bar relative pressure; factory tested at 5.80 bar, relative pressure.

“JACKET”

TESTED FINELY

A full stainless steel jacket surrounds the chamber made of AISI 316L. The jacket is tested at 6.8 bar relative pressure to withstand pressure.



“MAINTENANCE”

EASY ACCESS

Most of the Sterilizers are designed to enable frontal side maintenance access. The components inside are installed in a way to guarantee easy access for maintenance and are represented with a good engineering layout for better performance.

Electric components are installed in a sealed electric box protection level IP55 to guarantee higher safety for the operators and longer lasting working efficiency of the Components. For external connection, and software upgrade, are installed: RS232 and RJ45.





“BUILT-IN PRINTER & CHART RECORDER”

CLEAR INFORMATION

On the panel there is a built-in printer for cycle documentation which includes: print out of the date and time with hospital name, lot number, operator name, selected cycle, parameters values in different cycle phases that can be programmed as per customer requirements, phase by phase display, total cycle time and cycle results (valid or invalid) as well as printing alarms during cycle execution. A chart recorder is added as an option with independent sensors with validation and comparison between printed and recorded data



“AUTOMATIC SLIDING DOOR(S)”

SAFE & SMOOTH

Automatic Sliding doors enable safe & smooth door opening/closure using a pneumatic or electrical system depending from the model.

The movement can be:
(SV): vertical sliding door(s)
(SO): horizontal sliding door(s)



“GASKET AND SEAL”

LITTLE BIG DETAILS

The sealing of the door is guaranteed by the dynamic movement of the gasket obtained through introduction of steam in the seat of the gasket. The perfectly rounded corners prevent wear and tear on the gasket itself. Vacuum is performed at the end of the cycle to obtain the separation of the gasket from the door, for an easy opening of the same avoiding damage to the gasket itself and does not need maintenance and lubrication.

“DOOR(S)”

SAFETY CLOSURE & INTERLOCK SAFETY

The machine can be manufactured with a single door (1P) or pass through double doors (2P).

The machine is provided with high safety features including the following features for the door(s):

- Both doors (in case of double doors execution) cannot open at the same time, as interlock safety device prevents cross contamination.
- The safety lock does not enable door opening if a cycle is running or if the chamber is pressurized.
- There is no cycle start or steam inlet until the door(s) have been checked and are tightly closed.

For operator safety: door closure is stopped if an obstacle is found in the way of the closure.

“STERILE AIR”

BEST QUALITY FILTER

At the end of the cycle sterile air is injected inside the chamber to obtain uniform pressure, using an HEPA H14 air filter.

“QUALITY & SAFETY”

OUR CERTIFICATES

The autoclaves CISA P-LS comply with the Machinery Directive 2006/42 / EEC Directive and Directives 2004/108 / EC (EMC) and 2006/ 95 / EC (LVD) . They also meet the following electrical standards IEC EN 61010-1:2013 , IEC EN 61010-2 040:2005 , IEC EN 60204-1:2010 . The pressure vessels are in compliance with Directive PED 2014/68/UE.





“SAFETY FEATURES”

SELF TEST

According to international and European standards, the machine features a high safety program with a self test for auto check.

LIQUID CYCLE WITH “INDIRECT” FORCED COOLING

The liquid cycle with indirect forced cooling is studied for sterilization of liquids in open or hermetically sealed containers. While maintaining all of the features of the standard liquid sterilization cycle, this differs in the cooling phase, which is greatly reduced by introducing water in the cavity and sterile air into the chamber to compensate for the rapid variation in pressure between the ambient room and the container.

LIQUID CYCLE WITH “DIRECT” FORCED COOLING

The liquid cycle with direct forced cooling is indicated for liquids in closed containers and for particular needs in the pharmaceutical or research sectors.

The cooling of the material is achieved as in the indirect cooling cycle, but in addition sterile water is directly injected into the chamber. This guarantee an even faster cooling time and the possibility of cleaning residues linked to the evaporation of the treated liquid in case of container leakage.

CYCLE FOR HP WASTE

The HP cycle is generally indicated for the inactivation of high pathogenic wastes and consists of sterilizing the condensates produced by the steam in contact with the cold material throughout all the phases of the cycle and before the release in the environment.

Those potentially infectious condensates are pneumatically pumped, vaporized again and injected back in the sterilization chamber in a closed circuit.

Once the sterilization temperature is achieved, the system maintains these conditions for the whole plateau period to permit sterilization of the material and the condensates together.

The vaporized condensates are injected back in the chamber from the top, generating a turbulence in the chamber that prevents the formation of air pockets.

“OPTIONALS”

SOMETHING FOR EVERYONE

DRY VACUUM PUMP SYSTEM

The innovative CISA DRY system for the production of high vacuum does not need water for its operation by annulling common service water consumption. The high performance pump enables more extreme vacuum conditions to be generated inside the sterilization chamber, compared with traditional liquid ring pumps. Inside the chamber, the vacuum system reaches a 99% air removal.

In such conditions, steam penetration tests conducted on hollow material have registered excellent results.

The device, therefore, compared to those driven by traditional liquid ring pump, presents considerable advantages, among which:

- ZERO CONSUMPTION OF WATER FOR THE PRODUCTION OF VACUUM
- NO MACHINE DOWNTIME for the maintenance and repair and/ or replacement of the vacuum pump liquid ring subjected to the aggression of hard water.

ADDITIONAL TOUCH-SCREEN

An additional touch-screen can be installed upon request on the unloading side (sterilizer with two doors-2P) The dual touch-screen can customize the settings for the control of the machine; one of the two sides of commands can act as a main one.

TOUCH SCREEN 10”

CISA sterilizers can be equipped on the load side - or, as an optional, on the unloading side with a bigger touch-screen 10 Inch interface, for a better view of the display commands and consequently for greater usability.

DRAIN COOLING DEVICE

All discharges (vacuum pump, cooling device, chamber and jacket condensates) are conveyed in a container of stainless steel with thermostat to control the temperature before the exhaust in the pipeline.

The device measures the discharge temperature and is adding service water. The water will be maintained at less than 60°C and will thus be suitable for every supply line as well as adjustable for better management of the consumption of service water.

WATER RECOVERY DEVICE

The water used by the liquid-ring vacuum pump is collected in a break tank, where it is cooled by adding fresh water coming from the supply line and fed back into the circulation in the service of the pump itself. This system saves 50% of the service water used by the liquid-ring vacuum pump, thus optimizing management costs.



AIR GAP SYSTEM

The system is designed to disconnect the demi water to protect the functionality of the surge pressure from the water supply. This system in fact, according to the service water and/or treated matter, carries the water to an open break tank and brings it back to an atmospheric pressure, to avoid back-flow into the supply line.



AIR DETECTOR

The machine can be equipped with an air detector as an optional feature. This will improve the functionality of the machine using guaranteed steam concentration with less air bubbles.

DEGASSER

The degasser is a technology that allows the removal of presence of non-condensable gas in the steam released into the sterilization chamber; the water supply of the electrical steam generator is accumulated in a tank and is heated up to 70° C to allow the liberation of the gas dissolved in the water.

This ensures a higher quality of saturation of the steam that comes into contact with the material needed for sterilization.

The introduction of this technology is subject to the installation of an air gap system in the treated water supply.



STEAM GENERATOR UPGRADE

CISA provides the customer with the possibility of choosing electric power of steam generator in order to shorten the cycle times, especially in the preheating phase.

This system makes it possible to save about 15% of the total cycle time at the expense of greater power consumption. The power of the generator varies depending on the model of the sterilizer.





UPS BACKUP CONTROL SYSTEM

The UPS backup system is connected to the PLC and the touch-screen and allows you to accomplish the cycle in case of sudden surges or power failure. The cycle remains valid as long as the conditions that guarantee the cycle performances have not been compromised.

MIRROR REVERSE MACHINE

Depending on installation needs and to facilitate the operations of ordinary and extraordinary maintenance, the equipment can be configured in a standard or inverted module.

In the first case the chamber is placed on the left (looking from the loading side) and the technical module to the right, and in the second case the chamber is placed on the right side and the technical module is placed on the left. This optional varies from the request of the client.



LOADING ACCESSORIES

Accessories for loading and unloading are available for each model with the selection of: internal trolley (shelving unit/transfer carriage), external trolley (loading/unloading), automatic loading device automatic unloading device, electric height-adjustable loading/unloading trolley.

Loading devices are manufactured in stainless steel with sizes and loading mechanisms that enable full use of chamber and smooth operation with less personnel activity. Chamber rails can be added as an optional.





SYSTEM FOR AUTOCLAVE AUTOMATIC LOADING / UNLOADING



The system facilitates material loading/unloading operations. In fact this device allows the autoclave to be loaded or unloaded without an operator being present. Each individual system consists of a device placed in front of each machine, detecting sensors and coupling devices external trolley, push-button actuation and safety devices. The pneumatic mechanism and the electronic control by PLC guarantee a high reliability of the system. This group is entirely controlled by the PLC installed on the autoclave. A series of electronic devices prevents jams that may occur or any injuries to personnel working in close proximity.

“REDUNDANCY SYSTEM” DOUBLE CHECK ON PARAMETERS

An integrated system allows the operator to have a double check on the critical parameters of the cycle such as temperature and pressure. It features an additional PLC with its own set of probes, connected to the main one.



“SEPARATION BIOSEAL STERILE SIDE” INSPECTION WINDOW

The partition between the “contaminated” and the “safe” area inside the autoclave is made of stainless steel sheet with a thickness of 15/10 mm, welded to the room. Finishing can be in silicone or welded according to customers choice. On request the Bioseal can be equipped with inspection window.

“PRE-FILTRATION SYSTEM VACUUM CHAMBER”

IMPROVE THE PERFORMANCE

This system is used when there is a need to perform a cycle or a solid waste cycle and is consisted of removing any air pockets from the load to improve the performance of the sterilization cycles.

The method requires a filtration vacuum chamber using HEPA filter. In some cases it may be necessary to duplicate this type of filter for high levels of security, such as BSL IV.

In this case the machine will be equipped with two filters in series and in case of non-operation of these, the second filter can operate as a backup. Filters are also provided with two additional services, respectively: Standard and on Demand. An integrity test (to check if the filter is broken) and sterilization in-line (to sterilize them at any time before opening).

Housing made in AISI 316L stain steel body for filter, $Ra \leq 0.4 \mu\text{m}$, Filter is test report 2.3 EN10204 compliance CE PED, FDA approved per 21-CFR, extensively & scientifically validated to have absolute removal of $0.2 \mu\text{m}$ in liquids and $0.003 \mu\text{m}$ in gases, PP7 bacteriophage aerosol challenge membrane double layer PTFE, Filter area 8.6ft² (0.8m²) per 10 In (254 mm) element / 4.1 ft² (0.4 m²) per 5 In (127 mm) element, autoclavable at 125°, meets USP biological reactivity, in vivo for class VI-121°C plastics, meets oxidizables and pH per USP packaged waters)





“CYCLES AND VALIDATION” FOR LABORATORY REQUIREMENTS

All pre-programmed cycles loaded in the sterilizer are validated cycles and the software itself is a validated software; the re-validation of the cycles at customer end is possible and can be executed as per laboratory requirements.

“CONFIGURATION” CAGE STERILIZERS

The configuration of laboratory sterilizer can be done based on final application and customer or system requirements.

The LS Steam sterilizer for laboratory can be differently based on the safety level of the laboratory. Cycles for this model and machine configuration are customized to the application and bio safety level request by customers. The Laboratory Steam Sterilizer is used to support animal houses and research centres, providing different solutions of the animal starting from cage sterilization; waste sterilization and dead animals sterilization before final disposal. This machine is configured and equipped with sterilization cycles for all stabularium application.

The Laboratory version can also be used for high pathogen sterilization, as explained earlier, it is used for laboratory of high pathogen sterilization, meeting different safety levels and configured in single or double doors to meet laboratory safety level and execute a full safe treatment and sterilization without releasing out any non-safe drainage, air or any gaseous substances, with Bio Seal addition if required by the safety level of the laboratory.

“LIQUID STERILIZATION”

LIQUID CYCLE

The liquid cycle is one of the most important issues for any laboratory or pharmaceutical industry sterilizer: and the reason is mainly the cooling.

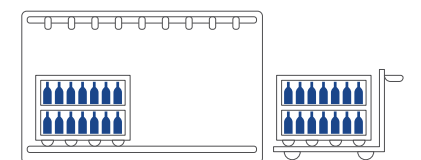
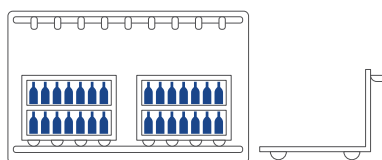
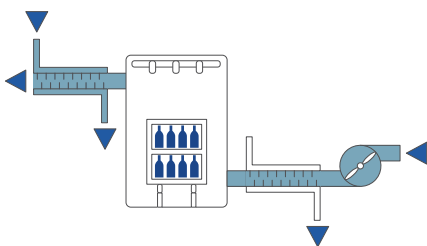
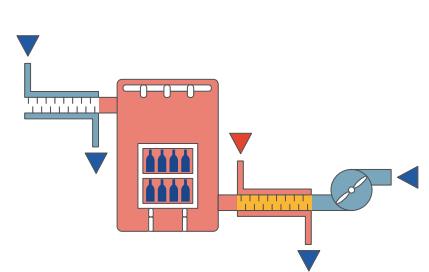
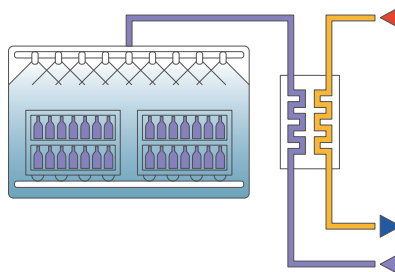
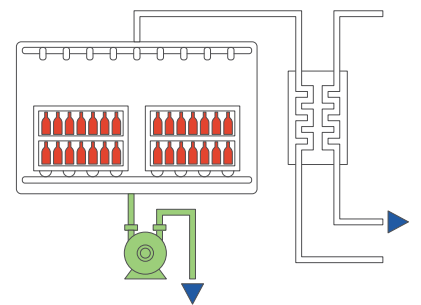
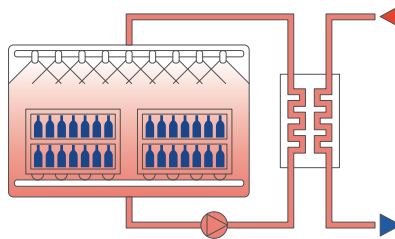
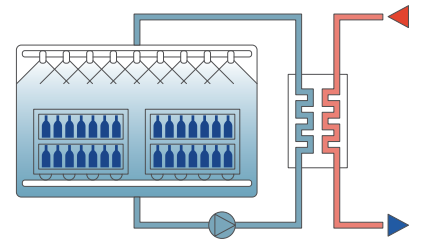
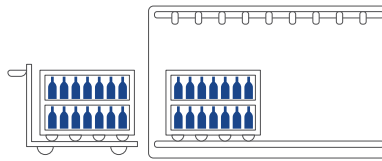
CISA equips the laboratory sterilizers with different cooling methods and the cooling system can be considered part of the pre programmed-cycles or as an optional phase that can be selected beside selecting of the cycle. The cooling method is connected to the type of liquid, container closure and resistance; but CISA autoclave is equipped with different cooling methods.

Those cooling methods are described below:

SUPER HEATED WATER STERILIZERS (ON REQUEST)

Super Heated Water Sterilizers are used for different applications, including pharmaceutical industry, food industry or similar; they are also used for bulk liquids, dry empty glassware, filled ampoules and others.

The advantage of using super heated water is to obtain rapid heating and rapid cooling with perfect drying and, in general, good sterilization results in a short cycle time, to guarantee at the same time a uniform temperature distribution all over the load.



The Super heated water cycle is consisted of the following phases after loading the chamber:

Loading
Filling the chamber with cold water
Re-circulating the water in the chamber and heating it up using a heat exchanger
Looping of heated water and re-injection in the chamber through matrix of water outlets that guarantee uniform cover of all chamber points using the pressurized hot water
Circulation of water and continuous heating using the heat exchanger as super heated water
Cooling
Drying
Cooling the load using normal temperature air injection in the chamber to increase the drying
The quality of air, pressure and temperature are calculated parameters to guarantee safe action without risking damage to containers or load
The Heating Up Time, Cooling Time and drying time are calculated to ensure rapid sterilization cycle without affecting the load inside.
Automatic loading and unloading are important accessories to save time during the process and to ensure higher productivity
A different set of Internal racks can be offered to meet the required Load requirements

TYPE OF COOLING	DESCRIPTION	APPLICATION
Natural Cooling	Making the liquid load cool down gradually by itself until reaching safe temperature value: this requires long cycle time	All liquid loads
Indirect Cooling	Cooling is achieved rapidly by introducing water in the jacket and sterile air in the chamber for making cooling fast	For open or closed containers with solutions: hermetically or non hermetically closed containers
Direct Cooling	By applying water shower in chamber followed by sterile air in chamber and water in jacket to speed up the cooling process	For closed containers with solutions: hermetically or non hermetically closed containers

“MODELS”

OUR PRODUCT RANGE

All of the sizes and measurements below can be changed according to the different configurations and applications of the machines.

*U.S. 600x300x300mm

**U.S. 600x400x200

The measures are expressed in mm.

P-3000

SERIES	CHAMBER DIM	DIMENSIONS 1P-2P	LT - U.S.*
P-3270 LS	322x322x720	700x1850x998-1028	71 - 1
P-3290 LS	322x322x1000	700x1850x1278-1308	101 - 1,5

P-3670 LS	336x666x720	903x1850x998-1028	157 - 2
P-3690 LS	336x666x1000	903x1850x1278-1308	218 - 3

P-3600

P-420

P-4270 LS	452x452x720	903x1850x998-1028	144 - 2**
P-4210 LS	452x452x1000	903x1850x1278-1308	199 - 3**
P-4212 LS	452x452x1280	903x1850x1558-1588	255 - 4**

P-4570 LS	452x660x720	1100x1850x998-1028	207 - 3**
P-4510 LS	452x660x1000	1100x1850x1278-1308	296 - 4,5**
P-4512 LS	452x660x1280	1100x1850x1558-1588	379 - 6**

P-450

P-640

P-6464 LS	660x660x720	1424x1850x998-1028	313 - 4
P-6410 LS	660x660x1000	1424x1850x1278-1308	434 - 6
P-6412 LS	660x660x1280	1424x1850x1558-1588	556 - 8
P-6415 LS	660x660x1600	1424x1850x1878-1908	695 - 10
P-6420 LS	660x660x2000	1424x1850x2278-2308	868 - 12





P-1000

SERIES	CHAMBER DIM	DIMENSIONS 1P-2P	LT - U.S.*
P-1110 LS	660x1120x1000	2000x2100x1440-1470	738 - 9
P-1113 LS	660x1120x1300	2000x2100x1740-1770	959 - 12
P-1115 LS	660x1120x1600	2000x2100x2040-2070	1181 - 15
P-1120 LS	660x1120x2000	2000x2100x2440-2470	1476 - 18
P-1125 LS	660x1120x2500	2000x2100x2940-2970	1844 - 24

P-1410 LS	660x1490x1000	2000x2350x1440-1470	982 - 12
P-1413 LS	660x1490x1300	2000x2350x1740-1770	1277 - 16
P-1415 LS	660x1490x1600	2000x2350x2040-2070	1572 - 20
P-1420 LS	660x1490x2000	2000x2350x2440-2470	1964 - 24
P-1425 LS	660x1490x2500	2000x2350x2940-2970	2455 - 32

P-1400

P-1315 LS	1050x1350x1600	2800x2100x2040-2070	2268 - 28
P-1320 LS	1050x1350x2000	2800x2100x2440-2470	2835 - 36
P-1325 LS	1050x1350x2500	2800x2100x2940-2970	3544 - 48
P-2015 LS	1050x2000x1600	2800x2750x2040-2070	3358 - 42

P-1350

P-2020 LS	1050x2000x2000	2800x2750x2440-2470	4198 - 54
P-2025 LS	1050x2000x2500	2800x2750x2940-2970	5247 - 72

P-2000



Infection Control System

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