

Life Science

Technical Specification Series SNA-1000



MATACHANA USA CORP
300 North Pottstown Pike
Exton, PA, 19341

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A. GENERAL DESCRIPTION

A.1.0 This specification describes a MATACHANA steam sterilizer. The sterilizer is equipped with an industrial DOUBLE PLC, featuring 2 independent systems Master & Slave (with pressure and temperature sensors), controlling the sterilizer for greatest cycle reliability and safety, using analog/digital inputs and outputs to centralize control of the sterilizer. This unit has (3) cycles plus (2) TEST Cycles and one pre-heating cycle as standard. The unit is capable of up to 99 different cycle programs. The unit is capable of providing suitable sterile processing of, glassware, hard goods, animal food/bedding, lightly wrapped porous loads and liquid loads in vented containers, depending upon options and features chosen. General temperature range shall be from 105°C (221°F) to 135°C (275°F) with additional options available, i.e.: Low Temperature, Filter, Gravity,... programs.

A.2.0 Internal Chamber Dimensions

Standard models:

- A.2.1 **model 1004 (single door)**
26 in Wide x 26 in High x 25 in Deep
670 mm Wide x 670 mm High x 625 mm Deep)
- A.2.2 **model 1004 (double door)**
26 in Wide x 26 in High x 25 in Deep
670 mm Wide x 670 mm High x 638 mm Deep)
- A.2.3 **model 1006 (single door)**
26 in Wide x 26 in High x 39 in Deep
670 mm Wide x 670 mm High x 998 mm Deep)
- A.2.4 **model 1006 (double door)**
26 in Wide x 26 in High x 39 in Deep
670 mm Wide x 670 mm High x 996 mm Deep)
- A.2.5 **model 1008 (single door)**
26 in Wide x 26 in High x 49 in Deep
670 mm Wide x 670 mm High x 1265 mm Deep)
- A.2.6 **model 1008 (double door)**
26 in Wide x 26 in High x 51 in Deep
670 mm Wide x 670 mm High x 1296 mm Deep)
- A.2.7 **model 1010 (single door)**
26 in Wide x 26 in High x 68 in Deep
670 mm Wide x 670 mm High x 1735 mm Deep)

- A.2.8** **model 1010 (double door)**
 26 in Wide x 26 in High x 68 in Deep
 670 mm Wide x 670 mm High x 1733 mm Deep)
- A.2.9** **model 1012 (single door)**
 26 in Wide x 26 in High x 78 in Deep
 670 mm Wide x 670 mm High x 2000 mm Deep)
- A.3.0** **model 1012 (double door)**
 26 in Wide x 26 in High x 78 in Deep
 670 mm Wide x 670 mm High x 1998 mm Deep)
- A.3.1** **Custom chamber size (single door/double door)**
 _____ Wide x _____ High x _____ in Deep

A.4.0 Unit Type/Air Removal

- A.4.1** Vacuum with Water Ejector **(Standard in all models)**
A.4.2 **Option:** Liquid ring vacuum pump

A.5.0 Steam Supply (Standard): Steam supply shall be house supplied saturated steam.

- A.5.1** **Option:** Stainless Steel 316 L Electric Steam Generator
A.5.2 **Option:** Carbon Steel Electric Steam Generator
A.5.3 **Option:** Stainless Steel 316 L Steam to Steam Generator

Note:

- **Option:** Clean / Pure steam to chamber, house steam to jacket.
- **Option:** 316L Jacket when supplying clean / pure steam to jacket.

B. REGULATIONS, CODES, AND STANDARDS

B.1.0 All engineering, manufacturing, rating, and testing shall conform, when applicable, to the following codes, standards, and specifications in effect at the time of order placement:

- | | | |
|---------------|--------|--|
| B.1.1 | ASME | American Society of Mechanical Engineers |
| B.1.2 | EN ISO | European Norm/International Standards Organization |
| B.1.3 | cGMP | Current Good Manufacturing Practices
(CFR Title 21 Parts 210 and 211) |
| B.1.4 | ANSI | American National Standards Institute |
| B.1.5 | OSHA | Occupational Safety and Health Administration |
| B.1.6 | NEC | National Electric Code |
| B.1.7 | FPA | National Fire Protection Association |
| B.1.8 | NPC | National Plumbing Code |
| B.1.9 | ETL | Environmental Testing Laboratories |
| B.1.10 | ISO | International Standards Organization 9001 and 13485 Certified |

B.1.11 MS Federal Specification GG-SS-1340A

C. MECHANICAL CONSTRUCTION

C.1.0 Fascia and Cabinet

Fascia and exterior cabinet panels manufactured from 304L stainless steel, Scotch Brite polish finish with a vertical grain pattern.

C.2.0 Pressure Vessel

Pressure vessel chamber is manufactured from 316L stainless steel ASME rated. Vessel is of rectangular design, horizontally mounted with internal corners longitudinally radiused and polished. All welds are ground smooth and polished.

C.2.1 Pressure Rating: Pressure rating shall be full vacuum to 44 psig.

C.2.2 Chamber Finish: Standard chamber polishing ≤ 1 Ra.

C.2.2.1 **Option:** polishing $\leq 0,8$ Ra

C.2.2.2 **Option:** polishing $\leq 0,6$ Ra

C.2.2.3 **Option:** polishing $\leq 0,4$ Ra

C.2.2.4 **Option:** electro polishing

C.2.3 Vessel Identification: Autoclave shall have one permanently fixed plate stamped in accordance with ASME codes with the following information:

- Name & Address of Manufacturer
- Unit Serial Number
- Chamber Pressure Rating
- Jacket Pressure Rating
- Stamp of Inspection Authority

C.2.4 Material of Construction:

The Chamber is constructed of solid 316L Stainless Steel, fully welded with radiused corners.

Option: 316Ti Stainless Steel

C.2.5 Baffles: Sterilizer chamber shall be fitted with steam inlet baffles constructed of 316L stainless steel. Baffle design is configured to direct condensate toward the chamber floor and prevent wetting of the load. Baffling also helps to assure proper steam and temperature distribution.

C.2.6 Chamber Penetrations: Sterilizer chamber comes equipped with (2) TWO Capped chamber penetration ports (1" and ½") for validation, temperature distribution and heat mapping.

- C.2.6.1 **Option:** Welded Tri-Clamp Closures
- C.2.6.2 **Option:** Threaded Tri-Clamp Closures
- C.2.6.3 **Option:** Flanged Closures

C.2.7 **Option: Mounting** 304L Stainless Steel, corrosion resistant mounting frame shall be provided, for pressure vessel.

C.2.8 **Tracks:** 316L guide tracks shall be furnished when a load cart and transfer carriage are purchased with unit.

C.3.0 JACKET CONSTRUCTION

C.3.1 **Material:** Continuous Jacket in, 316L stainless steel welded design, as standard.

C.3.1.1 **Option:** 316Ti Stainless Steel

C.3.2 **Monitoring:** Jacket shall be fitted with a pressure transducer to monitor jacket pressure.

C.4.0 DOOR CONSTRUCTION

C.4.1 **Operation:** Automatic horizontal sliding made of 316L stainless steel material.

C.4.2 **Gasket:** Door gasket is manufactured to withstand the temperatures and pressures generated. Unit employs an active seal using compressed air.

Option: Double door sterilizers have independent gasket pressurization system to guarantee the air tightness.

C.4.3 **Door Safety Features:** The sterilizer's door(s) shall be designed with several redundant/independent mechanical and control features that provide safety. Redundancy shall insure that the failure of any one feature does not result in an autoclave failure.

The door design shall meet all the requirements of ASME Boiler and Pressure Vessel code, Section VIII (Unfired Pressure Vessels), Division 1, Paragraph UG-35 (Quick-Acting Closures).

- The sterilizer's door has a safety gasket equipped with an infrared beam, which prevents any human body parts such as a hand or arm from being caught by accident. Specifically, if during the closing operation of the door, a force is applied on the safety gasket, the movement of the door is blocked.
- A cycle cannot be started until the door(s) are fully closed and locked.

- If there is pressure inside the chamber, the door cannot be opened.
- The final position of the door closing is detected by a limit switch monitored by the control system of the sterilizer
- If you stop pressing the door key, it reverses the motion until it is fully open.
- The doors cannot be opened while a cycle is in progress.
- The sterilizer door is locked when the front door panel of the sterilizer is fully open.
- The door(s) shall not unseal or unlock until the chamber pressure is 200 mbar or less.

C.4.4 Emergency Stop: (standard). Also known as “mushroom” and used for an emergency situation when the user needs to stop the sterilizer. Located on the front panel of the sterilizer, when manually pushed, it automatically turns off the power to all actuators installed in the sterilizer: door operation, injection of steam are interrupted.

An alarm will automatically signal the action. A key provided allows to unlock the operation of the sterilizer.

C.4.5 Door Interlocks (Double Door Units Only): All double door autoclaves shall be provided standard with interlocks to prevent inadvertent opening during the process. Doors shall be interlocked to prevent both doors from being opened simultaneously.

C.4.6 Option: Biological Cross Contamination Seal: The seal for preventing cross-contamination shall be designed for use in laboratories, animal facilities or BL-3 applications. The seal shall be designed in accordance with the industry standard Halogen or Helium Leak Test requirements. When required the sterilizer shall be provided with a cross-contamination seal located on the **loading or unloading side (it depends of the requirements)** of sterilizer to prevent passage of airborne microorganisms or air-flow from the space between the vessel body and the structural wall opening between the two areas. Rubber Sealing gasket, clamping bars, and fasteners are also provided for easier installation.

Note: All sterilizers furnished with cross-contamination seal shall include door interlocks.

C.5.0 INSULATION:

C.5.1 Insulation: Chamber and Door are completely insulated with 40mm (~1,57 in) of mineral wool and enclosed in galvanized, corrosion resistant plate.

C.6.0 PIPING AND COMPONENTS

C.6.1 Materials: Chamber shall be provided with 316L stainless steel piping with Clamp connections. Jacket shall be provided with threaded cooper piping. All piping

shall be modular in design, with unions placed before and after components to facilitate servicing.

C.6.1.1 **Option:** jacket piping in 304L Stainless Steel

C.6.1.2 **Option:** jacket piping in 316L Stainless Steel

C.6.2 Mounting: Piping and components are mounted off stands both on top of and right side of the chamber in the most practical and logical locations for proper function and ease of service.

Access to maintenance and service is designed to be from the right side of sterilizer, looking from the loading area

C.6.2.1 **option** Left Side Maintenance

C.6.3 Valves: Except where otherwise stated the valves are: for steam and exhaust pneumatically operated valves, for water and air solenoid-activated valves (or pneumatically operated valves it depends of the size of the sterilizer). Check valves shall be swing type. All valves shall be of material compatible with the utility service. All valves shall be provided with tags for identification. All pneumatic and hydraulic components shall be standard off the shelf, non-proprietary items.

C.6.4 Air Inlet Filter: The air inlet filter, used for vacuum break, shall be a hydrophobic type bacterial retentive absolute air filter 0.2 micron. The air filter shall be mounted external to the chamber with a replaceable element appropriately supported and connected.

C.6.5 Sensors and Gauges: All appropriate sensors shall be installed to be easily removed for calibration, except the gauges which shall be calibrated in place where required.

C.6.6 Venting System: An automatic condenser exhaust system shall be provided to condense and cool effluent flowing to the external drain. Water temperature shall be below 60°C (140°F)

Option: Closed-loop heat exchanger to return house chilled water to reduce water consumption.

C.6.7 Drain Temperature Probe: Chamber shall be provided with a single Pt-100 temperature probe in the drain to monitor sterilization temperature throughout the cycle and while in stand-by.

C.6.8 High Water Dump & Alarm: The drain line piping system is designed to remove excess condensate from chamber drain line before the condensate can impede the operation of the controlling Pt-100 temperature probe in the drainline, or contact the lowest product container in the autoclave chamber. A continuous automatic drain circuit located in the chamber drain is open all the time to remove the condensate during the cycle.

C.6.9 Drainage: Stainless steel basket screen shall be provided on chamber drains.

D. CONTROL SYSTEM (STANDARD)

D.1 Control System

Industrial dual computer employs 2 independent microprocessors master and slave (each with pressure and temperature sensors) to provide a proper control over the sterilization process offering a double security, process verification and reliability of the main process parameters. The main controller contains the following elements:

Industrial standard PLC with dedicated I/O system.

24-60, 24VDC digital inputs

24-60, 24VDC digital outputs

8-16 PT 100 ohm RTD inputs

8 Inputs of 4 -20mA

D.1.1 Digital Inputs

The digital inputs are operated with 24VDC. They are used for supervision of position (e.g. door position switches), supply media (e.g. water pressure) and further informations for process supervision.

The input voltage will not exceed 24VDC.

D.1.2 Digital Outputs

The digital outputs supply 24 VDC to the related actuator. The digital outputs are used to operate the sterilizer (e.g. opening/ closing of chamber door) and to control and operate the sterilization process.

D.1.3 Analog inputs for Reading Temperature

The analog input modules are prepared to read up to eight temperature (may be expanded for special applications) sensors type PT100. The connection is direct to the module to reduce inaccuracies that may incur with additional connections or terminations. Temperature readings by the analogue input are used for process control and supervision. Sensor failures as e.g. short cut or interruption will be detected automatically and will indicate respective failure message.

D.1.3 Analog Inputs for Reading Pressure

The analog input modules for reading pressure values (e.g. pressure of sterilizer chamber or jacket) provide eight channels for operation with a current loop of 4 – 20 mA . The pressure sensors are connected direct to the current loop of the respective analogue input. Sensor failures as e.g. short cut or interruption will be detected automatically and will indicate respective failure message.

D.1.4 Measuring pressures

The display and printing of pressures is a dual scale of pounds per square inch (when at 0 Psig or above), and inches of mercury (when below 0 Psig or below).

D.1.5 Display

Communication with the user is done via a 5.7" Color TFT Touch screen display (industrial standard display) with the following features:

- Resolution: 320 x 240 pixels
- 256 colors
- TFT display
- 4 MB memory
- Perfect visibility from any angle

D.2 Communication Ports

The control system contains 1 x Ethernet interface and 1 x USB connection ports for downloading or documenting the cycle data while in cycle or after that.

D.3 STERILIZATION PROGRAMS

Following are the names, relevant programs with related temperatures of the 3 sterilization standard cycles, one pre-heating and 2 test programs, which are pre-set by the manufacturer. This number of

Cycle no.	Program	Temp. °C
01-	B&D test	134
02-	Leak Test	-
03	Pre-Heating	121
50-	Solid 1	121 (modifiable) 115-135
51-	Solid 2	121 (modifiable) 115-135
52-	Solid 3	134 (modifiable) 115-135

D.4 COMMUNICATIONS AND MONITORING

D.4.1 Communication Options:

D.4.1.1 **Option:** Ethernet connection for direct factory on-line diagnostics.

D.4.1.2 **Standard Communication port**

- RS232
- RS485
- Optional software package shall be provided, if required, to download information as an executable file to a remote computer.

D.4.1.3 **Voltage free Contact:** Indication of Alarm to external supervision system.

D.4.2 Temperature Load Probes: Chamber shall be provided with one double chamber probe (Pt-100) to monitor chamber temperature.

Option: temperature probe load, particularly with liquid loads.

Option: Quantity: _____ **Additional Load Probe(s)** max. 4 double probes)

D.4.3 F₀ Control: Included as standard.

D.4.4 **Option: Emergency Manual Exhaust Valve:** Manual valve used to safely reduce chamber pressure to remove product in the event of power loss.

D.4.5 The autoclaves required utilities are set to automatically shut down and also start up at a pre-determined time. Operator selected, each timed set point is independent of each other.

Option: Auto Utility Start Up

Option: Auto Suspend.

E. PRINTER

E.1.0 Character: Thermal printer with high quality thermal paper. EasyLoad system for easy and fast replacement of paper role. Paper 2 ¼" wide, 384 dots per line and a printing resolution of 203 dpi. Cycle print data provide a record of all necessary cycle data, with data print at all transition points, and at each phase.

E.2.0 Printout: Printout supplies a record with the following information:

- Cycle Time and Date
- Cycle Name
- Program number
- Sterilizer serial number
- Software version
- Operator Number
- Cycle number
- Cycle Start Time and Date
- Total Cycle Time
- Sterilize Set Time
- Sterilize Set Temperature
- Achieved Sterilize Temperature Minimum
- Achieved Sterilize Temperature Maximum

- Achieved Sterilize Pressure Minimum
- Achieved Sterilize Pressure Maximum
- F₀ Chamber value
- F₀ Minimum value
- F value calculation reference temperature
- F value calculation “z” value
- Time, temperature and pressure of the chamber at the beginning of each phase
- Phase name
- Alarms and warnings

F. DIGITAL RECORDER Option:

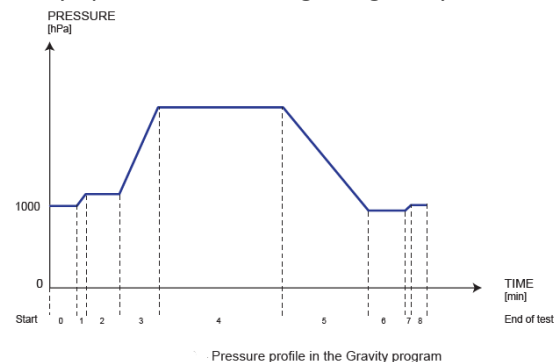
3 to 5 channel videorecorder which produces a continuous graphic chart of pressure and temperature in the sterilizer chamber during the cycle run. The cycle's register is performed in a specific digital format, compressed and encoded, which cannot be modified in the device itself. Using the videorecorder software, these files can be viewed and transferred to a PC for analysis and storage, and graphs and data tables can be generated.

G. CYCLES

G.1.0 Gravity Cycle (optional): The gravity cycle shall provide for the sterilization of heat and moisture-stabile goods at 105° C to 135° C, and decontamination of supplies after laboratory procedures using a gravity-air-displacement principal.

G.1.1 Gravity Cycle Parameters

Purge Time	up to 99-min/99 sec
Sterilize Time	up to 99-hr/99 min/99 sec
Sterilize Temperature	up to 135°C
Fast Exh. to Dry Set Point	up to 9.9 psig



G.1.2 Gravity – Gravity Air Removal with Fast Exhaust

- **Purge:** chamber is purged of air using steam for an operator selected timed period.
- **Heating:** Chamber is filled with steam to eliminate air while heating load. Steam conditions within the chamber are verified by the microprocessor control. Following verification, the cycle proceeds to the next phase.
- **Sterilize:** The sterilization timer automatically starts. Temperature is checked in the drain line and maintained until the exposure set time expires. Should the temperature in the drain line fall below a pre-set under-temperature limit the timer will stop, and the under-temperature alarm will be initiated.

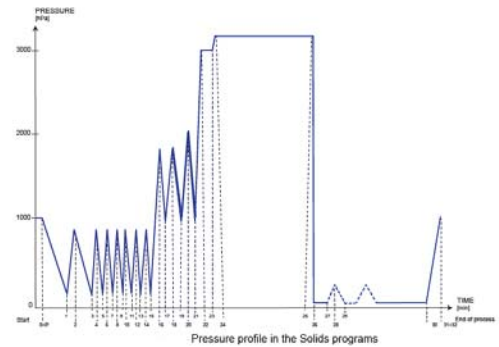
- **Fast Exhaust:** Fast Exhaust valve is opened and chamber is quickly exhausted to atmospheric pressure.
- **Vacuum breaking:** The chamber is vented to atmosphere.
- **Cycle is complete.**

G.2.0 Solid (Vacuum Pulsing) Cycle: For processing porous materials, heat and moisture-stabile materials at 121°C degrees to 135°C which require assisted air removal. It also provides very efficient steam penetration for fast processing of appropriate materials.

G.2.1 Evacuation Method: Standard Water Ejector.

G.2.2 Solid Cycle Parameters

Purge Time	up to 99-min
Pressure	up to 30 psig
Vacuum	down to 28 in/Hg
Number of Pulses	up to 99
Sterilization Time	up to 99 min
Sterilization Temperature	up to °C
Dry Time	up to 99min
Dry Vac Level	down to 1 psig

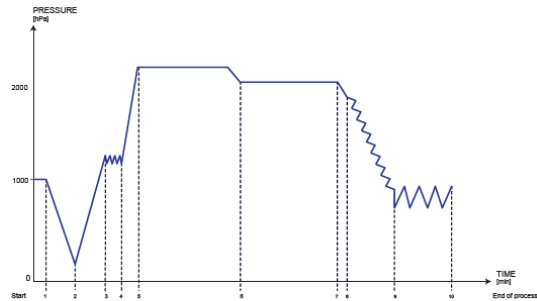


G.2.3 Air Removal

- **Pre-Vacuum:** Air is evacuated through a water ejector or vacuum pump from the chamber to a vacuum level. A set amount of steam is then admitted to the chamber to a pre-selected positive pressure. This series of vacuum/pressure pulses is repeated as required to remove any residual air in the chamber and product load.
- **Heating:** The chamber is filled with steam to the pre-selected sterilize temperature set point.
- **Sterilize:** The sterilize timer automatically starts. Temperature is checked in the drain line and maintained until the exposure set-time expires. Should the temperature in the drain line fall below a pre-set under-temperature limit the timer will stop, and the under-temperature alarm will be initiated. The cycle proceeds to the next phase.
- **Exhaust:** Steam is exhausted from the chamber through condenser to a positive pressure level.
- **Drying:** The water ejector or vacuum pump starts and reduces the chamber pressure to the selectable vacuum level at which time the vacuum dry timing function starts. The water ejector or vacuum pump continues to reduce the chamber pressure level to the limit of the vacuum system. The load is then held under vacuum, with the jacket heat on, for the set period of dry time to achieve drying of the load.

- **Air Break:** At the conclusion of the drying time, air is admitted through a 0.2-micron retentive filter until the chamber reaches atmospheric pressure.
- **Cycle is complete.**

G.3.0 Liquid Cycle (Vented Containers Only): The liquids cycle shall provide for the sterilization of liquids and media in vented borosilicate glass or metal containers from 105°C to 135°C. The exhaust (cooling) phase shall utilize optimal solution cooling to control the exhaust rate. The exhaust time shall be as short as possible. Solution volume loss due to evaporation shall not exceed 5% and liquid loss due to boil-over shall be minimized.



Pressure profile in the Open Liquids programs with forced cooling

G.3.1 Liquid Cycle Parameters

Sterilize Time	up to 99 min
Sterilize Temperature	up to 135°C

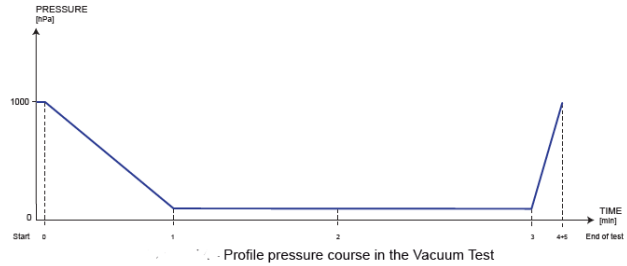
G.3.2 Liquids – Gravity Air Removal with Slow Exhaust

- **Pre-vacuum:** The water ejector or vacuum pump starts to reduce the chamber pressure level to the pre-selected limit of the vacuum system in order to remove the air inside the chamber.
- **Heating:** The chamber is filled with steam to the pre-selected sterilize temperature set point.
- **Sterilize:** When the temperature of the product probe reaches the sterilization pre-selected temperature, the sterilize timer automatically starts. Temperature is sensed in the chamber and in the drain line and maintained until the exposure set-time expires. Should the control temperature fall below a pre-set under-temperature limit the timer will stop, and the under-temperature alarm will be initiated. The cycle proceeds to the next phase.
- **Slow Exhaust:** The chamber pressure is slowly exhausted and reduced to set vent pressure.
- **Air Break:** At the conclusion of the cooling time, air is admitted through a 0.2-micron bacteria retentive filter until the chamber reaches atmospheric pressure.
- **Cycle is complete.**

H. CYCLES-TEST

H.1.0 Vacuum Leak Test Cycle (as Standard):

An operator-selectable automatic leak test cycle shall be provided. The cycle parameters are fixed and designed to verify the integrity of the door seal and piping system. The acceptable maximum leak rate shall be less than 13 mbar after a ten (10) minute period following a fixed stabilization time. A printed record of the entire leak test including the lead rate shall be provided.



H.2.0 Bowie-Dick Test Cycle (as Standard): An operator-selectable, air detector test cycle shall be provided. The fixed cycle parameters shall be designed to remove any residual air in the load. This test cycle is used to determine if a rapid penetration of steam in to the test load has taken place. A printed record of the entire air detection cycle has taken place.

I. CYCLES – OPTIONAL

I.1.0 Option: Air Over-Pressure Cycle (Laboratory or Healthcare)

This cycle shall allow the processing of liquids in vented or non-vented containers (less than or equal to 50cc). The cycle shall utilize controlled over-pressure with filtered compressed air during the exhaust (cooling) phase of a liquid cycle to prevent liquid loss. A resistance temperature detector (Pt-100) shall be provided to monitor the liquid load temperature.

I.1.1 Optional Air Over-Pressure Liquid Cycle (vented or non-vented glass containers)

- **Pre-vacuum:** The water ejector or vacuum pump starts to reduce the chamber pressure level to the pre-selected limit of the vacuum system in order to remove the air inside the chamber.
- **Heating:** The chamber is filled with steam to the pre-selected sterilize temperature set point.
- **Sterilize:** When the temperature of the product probe reaches the sterilization pre-selected temperature, the sterilize timer automatically starts. Temperature is sensed in the chamber and in the drain line and maintained until the exposure set-time expires. Should the control temperature fall below a pre-set under-temperature limit the timer will stop, and the under-temperature alarm will be initiated. The cycle proceeds to the next phase.
- **Air Cool:** The jacket steam is turned off, and their steam is replaced with fresh water. Chamber is pressurized with filtered compressed air and maintained at the sterilize pressure (it gradually replaces the steam with air). The incoming air passes over the load, and is exhausted while maintaining the chamber pressure. When the load temperature, as

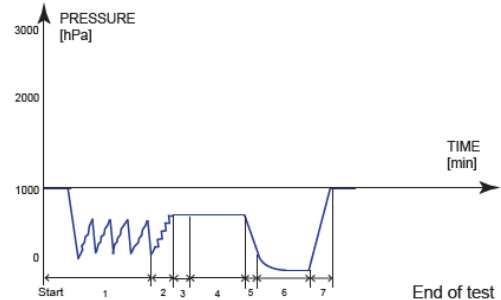
monitored by a resistance temperature detector (Pt-100), reaches the selected temperature (95°C maximum) the cycle proceeds to complete.

- **Slow Exhaust:** The chamber pressure is slowly exhausted and reduced to set vent pressure.
- **Air Break:** At the conclusion of the drying time, air is admitted through a 0.2-micron bacteria retentive filter until the chamber reaches atmospheric pressure.
- **Cycle is complete.**

I.2.0 Option: Low temperature Cycle (Laboratory)

Cycle is designed to allow “low” temperature sterilization. Temperature range setting is flexible within 167°F to 275°F (75°C to 135°C). This type of cycle allows for fractional sterilization, pasteurization, or inspissation.

Note: On some units, piping and components necessary to provide a Low temperature Cycle, cannot also be vacuum units.



- Pressure profile in the Low temperature 2 program

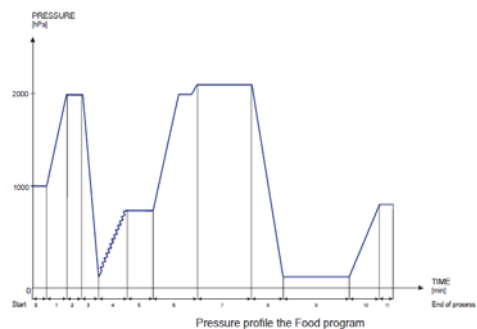
I.3.0 Option: Disinfection Cycle (Laboratory)

Cycle is designed to allow for “low” temperature disinfection. Temperature is held fast on this cycle at 221°F (105°C) and is not programmable. This type of cycle is generally used for melting agar in petri dishes in the laboratory environment. Process steam is allowed to enter the chamber and the fast exhaust valve is opened to allow steam to “stream” over the contents of the unit.

Note: This cycle can be programmed.

I.4.0 Option: High Vacuum Animal Bedding & Feed Cycle (Laboratory)

This cycle is designed for fast, efficient, odor reduced processing of animal bedding or feed. Cycle is equivalent to “High-Vacuum” cycle, utilizing a water ejector or a liquid ring mechanical vacuum pump for air removal during the pre and post conditioning phases of the cycle. Operator(s) can program the number of pre-vacuum “pulses” required to suit their application. In addition, a final “air-wash” is included to reduce the odor associated with processing bedding and feed in animal research facilities. This cycle also allows the operator(s) to program the number of post-vacuum “pulses” required to produce dry bedding and feed at the end of the cycle.



Pressure profile the Food program

I.5.0 Option: Thermal Effluent Sterilization Cycle (L-3 system): (Laboratory)

The Matachana autoclave, equipped with a thermal effluent sterilization piping package for Biological Safety Level Applications, is unique in the industry.

Autoclaves in this application utilize a steam ejector venture or a liquid ring mechanical pump, a predetermined length of piping (according to the cubic volume of the vessel), and a cooling exchanger. The system is designed to safely and effectively sterilize all effluent and air contaminants prior to release to the sanitary drain.

At the start of the cycle, during the pre-vacuums, the air is removed through a self-sterilizing filter on an hermetical stainless steel case.

The steam is introduced inside the chamber by the bottom. All the condensates are retained at the bottom of the chamber and they are sterilized during the cycle.

When the sterilization phase ends, the sterilized effluent is now released to the drain through the standard vacuum system, at the same time that it is cooled.

Note: All standard pre-vacuum and special cycles are still available with this treatment system.

I.6.0 **Option: Air Filters:** Air filter unit with removable stainless steel case for easy maintenance. Self-sterilizing filter.

I.7.0 **Option: In-Situ L-3 Filters:** Jacketed, steam heated for effluent decontamination. Additional unit for BSL3 units.

J. LOADING EQUIPMENT

J.1.0 **External trolley:** 304L stainless steel electro polished transfer carriages shall be provided. External unit to transport internal unit (J.3.0).



J.2.0 **Loading Rack:** 304L stainless steel electro polished loading rack shall be furnished. Can only be used with the external trolley (J.1.0). With two levels.

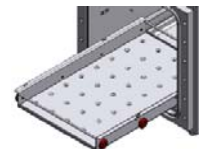


J.3.0 **Additional Shelves:** Additional shelves for the racks from 304L stainless steel.

Quantity: _____



J.4.0 **Mobile platform:** Mobile platform with guides fixed inside the chamber, for easy loading/unloading material.



K. ENGINEERING DATA

- K.1.0** Sterilizers shall be piped, inter-wired and tested at manufacturer's plant.
- K.2.0** Each connection shall be tagged for field identification during the installation.
- K.3.0** The following operating utilities shall be required: **Utility Data on Shop Drawing**
- K.3.1 ELECTRICAL: Control power;** 1 phase 120v-20amp dedicated line.
Main power; 3 phase with disconnect when vacuum pump and/or electric generator are required.
- K.3.2 COLD WATER: House Supplied,** see Technical drawing
- Option: Vacuum water saver, vacuum pump system required.**
- K.3.3 Clean Water Supply: (for Stainless Steel Generators-Steam or Electric)**
- K.3.4 STEAM:** condensate free, between 97-99.9% vapor quality
***House Steam Supply: Shut-off and steam trap required.**
***Steam Separator REQUIRED on steam supply line.**
***All Safety valves to be piped, local codes should apply.**
- K.3.5 FLOOR DRAIN: Floor Sink necessary**
- K.3.6 COMPRESSED AIR:** 87-116 psi
 Option: Integral Air Compressor

L. QUALITY AND WARRANTY

- L.1.0 Quality:** Product submitted for approval must reflect construction quality adequate in all aspects with standard products manufactured by Matachana.
- L.2.0 Warranty:** Matachana warrants that each sterilizer is carefully tested, inspected and leaves the factory in proper working condition, free of visible defects. Coverage includes **one** year on parts (except expendables) and **one** year on labor. The pressure vessel is further warranted to the original owner against material and workmanship failure for a period of 15 years from the date of initial operation. All equipment **MUST** be serviced by an authorized service organization and **preventative maintenance MUST be performed DURING the warranty period**, in order for the warranty to be valid. Warranty shall start at completion of installation and start up.

M. DOCUMENTATION

- M.1.0 Installation Drawing:** A copy of the layout drawing and equipment arrangement drawings are sent after receipt of PO and architect drawing.

M.2.0 Pressure Vessel Documentation: One copy of pressure vessel documentation is provided.(Acc. To ASME, it is the “Manufacturer Data Report”)

M.3.0 Sterilizer Documentation: All engineering drawings are produced with AutoCad. Drawings and manuals are supplied as printed copies and can, if requested, can be supplied as electronic copies. On completion of delivery, the following documents are supplied in (1) one set:

- Layout Drawing
- Wiring Diagram
- Cycle Descriptions
- Operating Instructions
- Part List for Special Components
- Recommended Spare Part List

N. SERVICE:

N.1.0 Access: Service access shall be provided to the right hand side of the sterilizer when viewing from the load side (as standard).

Option: Left side maintenance

N.2.0 Piping Skid: Some options require a side mounted piping skid to further facilitate serviceability. (When applicable)

N.3.0 Troubleshooting: Control system will allow for activation of outputs and inputs, both analog and digital, in order to check sensors, valves and other components.

N.4.0 Alarms: Alarms will be recorded, printed out, and saved within the control system to aid in troubleshooting.

N.5.0 Language: Text, parameters, alarm identification, phase of cycle on all control operating interfaces will be in English.