

**APPLICATION**

The AMSCO LSS large steam sterilizer is designed to process laboratory animal caging systems, hard goods, porous loads and liquid loads in vented and non-vented containers.

**DESCRIPTION**

The AMSCO LSS large steam sterilizer is equipped with a pre-programmed Allen-Bradley<sup>1</sup> Programmable Logic Controller (PLC) and is capable of sterilizing a variety of loads using saturated steam under pressure. Mechanical air removal is used for porous loads. Gravity displacement is used for liquids in vented containers or other items that cannot tolerate a vacuum. The average sterilization temperature is controlled within ±1.0°C (1.8°F) of sterilization temperature set point during the exposure phase, after stabilization. The sterilizer is equipped with a standard pre-vacuum cycle provided for sterilization of dry goods and porous loads at 110-135°C (230-275°F). Liquids in vented containers may be processed using a slow exhaust post-conditioning phase. All sterilizers are fully tested prior to shipment to ensure proper operation.



(Typical - details may vary.)

**Selections Checked Apply To This Equipment**

**MODEL (W x H x D)**

- LSS 91521**  
950 x 1550 x 2150 mm  
(37 x 61 x 85")
- LSS 91821**  
950 x 1850 x 2150 mm  
(37 x 73 x 85")
- LSS 92121**  
950 x 2150 x 2150 mm  
(37 x 85 x 85")
- LSS 121821**  
1250 x 1850 x 2150 mm  
(49 x 73 x 85")
- LSS 122121**  
1250 x 2150 x 2150 mm  
(49 x 85 x 85")
- LSS 152121**  
1550 x 2150 x 2150 mm  
(61 x 85 x 85")
- LSS 182121**  
1850 x 2150 x 2150 mm  
(73 x 85 x 85")

**DOORS**

- Single
- Double

**MOUNTING CONFIGURATION**

- Floor Mounted
- Pit Mounted

**STERILIZER VOLTAGE (3-Phase)**

- 208 V, 60Hz
- 230 V, 50 Hz
- 240 V, 60 Hz
- 400 V, 50 Hz
- 480 V, 60 Hz
- 600 V, 60 Hz

**OPTIONS**

- Operator Interface Control Function (Both Sides)<sup>2</sup>
- SCADA<sup>3</sup> Data Exchange Table
- Utility Supervision and Monitoring
- USB Port (for Cycle Data Download)
- Mirror Construction, Chamber Right Side
- Air Differential Seal
  - Sterile Side
  - Non-Sterile Side
- Bioseal (BSL-3/BSL-4)
- Air Tank Back-Up for Door Gasket
- Enclosure Side Panels
  - Right
  - Left
  - Back (Single Door Only)
- Chamber Polish to < 0.6µm (25µ-in) Ra
- Cooling Water Saving Package
- Closed Loop Cascade Jacket Cooling
- Water Recycling Package
- Steam Pressure Reducing Valve (PRV)
- Utility Shutoff Valves
- Probe for Load Temperature
- VHP<sup>4</sup> Ready (for portable VHP sterilizer)
- Self Cleaning Drain Strainer
- Rub Rails
- Plant Steam Condensate Return (Jacket)

**OPTIONS (CONTINUED)**

- Chamber Tracks
- Seismic Tie-Down Kit (Based on CA req.)
- Stainless-Steel Valves for Clean Steam
- FAT<sup>5</sup> Procedures and Results
- Customer Attended FAT with Documentation

**OPTIONAL CYCLES**

- Air-Over-Pressure with Jacket Cooling
- Effluent Decontamination Cycle
- Effluent Decontamination with VIRASURE™ Air Decontamination System

**ACCESSORIES**

- Loading Cart
- Wire Shelves for Loading Cart (Qty. \_\_\_)
- Perforated Shelves for Loading Cart (Qty. \_\_\_)
- Half-Length Cart (one shelf included)
- Additional Half-Length Shelves (Qty. \_\_\_)
- Perforated Shelf for Half-Length Cart (Qty. \_\_\_)
- Spare Parts Kit
- Feed-Through Assembly for 36 Thermocouples

**REMOTE MONITORING**

- ProConnect® Technical Support Services (Remote Monitoring, Priority Technical Support, Customer Care Center Access, Equipment Performance Reports). Available in U.S. and Canada only.

Item \_\_\_\_\_

Location(s) \_\_\_\_\_

1. Allen-Bradley is owned by Rockwell Automation, Inc.  
 2. Double-Door units only. Adds an interface to Sterile Side; Note: interface on Non-Sterile Side is standard.  
 3. SCADA - Supervisory Control and Data Acquisition  
 4. VHP - Vapor Hydrogen Peroxide  
 5. FAT - Factory Acceptance Test

## STANDARDS

The sterilizer is manufactured in an ISO 9001, ASME Section VIII Division 1, PED Module H/H1 and EN ISO 3834-2 certified facility and meets applicable requirements of the following listings and standards. *Note: Equipment is provided with either ASME or PED stamped pressure vessel.*

### NORTH AMERICA

- **Underwriters Laboratory (UL) Standard UL61010-1**  
(Local inspection required for full UL Stamp)
- **ASME Code, Section VIII, Division 1**  
for unfired pressure vessels
- **Seismic Pre-approval R-0272 and R-0275**, California Administrative Code for Seismic Stress Calculations
- **CSA 61010-1**  
(Local inspection required for full CSA compliance)
- **CRN** available upon request for pressure vessels in Canada

### EUROPE

- **CE Compliance**
  - **Pressure Equipment 97/23/EC (PED)**
  - **Machine Directive 2006/42/EC**
  - **Low Voltage Directive 2006/95/EC**
  - **Electromagnetic Compatibility Directive (EMC) 2004/108/EC**
- **EN60204-1**

## FEATURES

This section covers four categories of features.

- **Safety Features**
- **Standard Features**
- **Energy and Water Conservation Features**
- **Optional Features**

### Safety Features

**Emergency stop button**, located on non-sterile end (and sterile end if double door unit) of sterilizer, returns valves to safe condition and halts cycle processing when pressed. Once released, the operator chooses to either abort or continue cycle operation.

**Compressed air tank (optional)** provides air pressure to door seals for a period of at least 1 hour if the normal air pressure falls below minimal supply pressure. A manual connection on the air tank is provided to provide indefinite air pressure to the gasket using an air compressor or gas cylinders.

**Security access codes** provide restricted access of unauthorized users to critical operational modes. Five access levels are available:

1. Operator level password (**level 1**) permits user to select a cycle, start a cycle, acknowledge alarms, view cycle parameters and manually print reports;
2. Supervisor level password (**level 2**), in addition to level 1, permits user to edit cycle parameters, edit the Proportional Integral Derivative (PID) parameters;
3. Calibrator level password (**level 3**), in addition to level 2, permits user to calibrate instruments;

4. Service level password (**level 4**), in addition to level 3, permits user to view inputs, view system diagnosis, activate/deactivate outputs, edit common settings and change date/time;
5. Administrator level password (**level 5**), in addition to level 4, permits user to configure user names and edit passwords.

**Door sensing device** automatically stops chamber door movement if an obstruction is detected while door is closing.

**Door interlock (double door units only)** allows only one door to be opened at a time, and during processing, prevents either door from being opened until the sterilization cycle completes or is aborted. The door opening/closing sequencing logic can be configured.

**Pressure relief devices** on chamber and jacket limit pressure buildup so rated pressure of vessel is not exceeded.

**Steam valve interlock** prevents the steam valve from opening when the door is open.

**Pressure interlock** prevents the user from opening the door when the unit is above or below atmospheric pressure.

**Chamber level switch** prevents the chamber door from opening when liquid is detected in the drain.

### Standard Features

**Modular construction** is used in building the sterilizer. The sterilizer is designed and manufactured with a piping skid separate from the chamber to facilitate easy ingress. The sterilizer ships in two crates.

*NOTE: Crates are not designed for outdoor storage.*

**Control system** is mounted in an integral cabinet and configured with an Allen-Bradley PLC. The controller monitors and controls all sterilizer operations and functions; and allows up to 20 sterilizing cycles to be configured to meet the specific processing requirements.

**Operator interface** consists a touch-sensitive color screen and integral impact printer located on the main operating (non-sterile) end of the sterilizer. All sterilizer functions, including cycle initiation and cycle configuration, are performed using the touch screen. Displayed messages are complete phrases with no codes that need to be cross-referenced. The screen also displays any abnormal (alarm) conditions that may exist in or out of a cycle.

If the sterilizer is equipped with double doors, indicator lights for cycle status and alarms are provided on non-operating end.

A 42-column impact printer provides real-time process data and alarm information in a comprehensive batch report.

**Chamber and jacket pressure gauges** are mounted on the loading side (non-sterile end) of the unit. Pressure is displayed in bar/psi. If the sterilizer is equipped with double doors, an additional chamber pressure gauge is provided on the unload side (sterile end) of the sterilizer.

**Resistance Temperature Detector (RTD)** is installed in the chamber drain line to sense and control temperature variations within chamber. The signals provide accurate control inputs and readouts throughout entire cycle.

**Dry contacts for door open/close, unit on/off and alarm status** can be connected to communicate the door position, and unit's power and alarm status to facility's monitoring system.

**Steam bleed** supplies constant steam flow across chamber RTD to ensure even chamber temperature distribution.

**Horizontal sliding doors** use air to activate the door gasket during sterilization runs and stand by. The doors are operated from buttons on the control panel. When a cycle completes, the gasket retracts under vacuum into a machined groove in the sterilizer end frame.

**NOTE:** As an alternative, for AMSCO LSS sterilizers (models 9, 12 and 15 only) power-assisted hinged doors can be provided for both floor- and pit-mounted versions\*

For sterilizers installed in a pit, the door is elevated from the pit and locking mechanisms are engaged underneath the door and under each hinge to ensure safe operation.

Hinges for door can be mounted on either side of sterilizer, opposite the control. The door is sealed with an active air-backed gasket.

**Equipment documentation package** includes one copy of the user manual. The manual includes an operator section, maintenance section, equipment drawing, process and instrumentation diagram (P & ID), electrical drawings, mechanical/electrical parts list, spare parts list, component cut sheets, factory test certificate, and pressure vessel certificate.

**Calibration** is provided through the control panel to all system temperature and pressure channels. Calibration is performed in the Calibration mode, accessible through the touch-screen display, and accomplished using external temperature and pressure sources. The control system provides a printed record of all calibration data for verification of current readings.

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## Energy and Water Conservation Features

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**Water Saving Control – Standard** A temperature probe and valve are installed to limit the amount of water used in condensing and cooling effluents from the unit.

**Automatic Utilities Startup/Shutdown – Standard** Used to shut off all utility valves, permitting slow cooling of the entire vessel and load. Programmed and manual restart options are available.

**Cooling Water Saving Package – Optional** is designed to utilize a Customer-supplied closed loop water (tower or chilled) utility to minimize the consumption of the facility's supply water. This is done by *first*, cooling and recirculating the initial charge of vacuum pump seal water through a heat exchanger and back to the break tank, and *second*, cooling the chamber effluent with a heat exchanger.

**Water Recycling Package – Optional** is designed to recirculate facility-supplied water to cool the vacuum pump. To maintain vacuum efficiency, the control system monitors and determines when to add water. Note that this option can significantly reduce the amount water supplied by the facility; and does not require a closed loop chilled water utility.

**Closed Loop Cascade Jacket Cooling – Optional.** Jacket steam effluent is captured and condensed using closed loop chilled or tower water, then re-circulated to cascade over the chamber to assist in cooling chamber for liquid loads, saving up to 3000 liters of water over standard jacket cooling option.

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## Optional Features

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**Operator interface control function – both sides (double door units only)** permits operator to view, select and initiate cycles from an operator interface panel located on sterilizer sterile (non-operating) side.

**Mirror construction** reverses standard positioning of sterilizer chamber and service area. With mirror construction, as viewed from operating end, sterilizer chamber is relocated to right side and service side is relocated to left side. Standard configuration is chamber on left and service on right side (as viewed from the operating side).

**Air differential seal (sterile or non-sterile side)** is fabricated from AISI 304 stainless steel, and is affixed to load end or unload end. Adjustable interface panels are provided at top, bottom and sides, with silicone gasket to seal unit system to facility structure. Seal is designed to maintain room air differential pressure and can be used with some BSL-3 applications.

**Supervisory Control and Data Acquisition (SCADA) Data Exchange Table** allows user to monitor all real time process data via Ethernet connection. The External Communication Specification defines the data tables and memory variables for SCADA system.

**NOTE:** This option does not provide configuration of data communication. Specific communication format can be provided if agreed and priced separately.

**Bioseal (BSL-3/BSL-4 environment)** is located on sterilizer load (non-operating) end to prevent passage of airborne microorganisms from one classified area to another. Seal is used most often in Bio Safety Level 3 (BSL-3) and Bio Safety Level 4 (BSL-4) applications. Seal is constructed of AISI 304 stainless steel seal-welded to chamber. A 304 stainless-steel wall flange and rubber gasket with bolted clamp assembly is provided to complete the seal. As an option, seal can be leak tested with helium or pressure decay tested with air.

**Side/Back enclosure panels** are installed on the right and/or left side or back of the sterilizer framework as specified. The side panels are constructed from AISI 304 stainless steel.

**Utility shutoff valves** include manual valves on incoming utilities for shut off and isolation during maintenance.

**Probe for load temperature.** A load probe (optional) can be placed in product during sterilization cycle for controlling and monitoring purposes. The load probe option is required for monitoring the temperature of liquid loads in the standard liquid cycle, and is important in regard to the lethality factor ( $F_0$ ). Unit can be controlled using ( $F_0$ ) with this option.

**Steam Pressure Reducing Valve (PRV)** uses a non-sanitary PRV to limit the incoming steam pressure to the pressure vessel design requirements (if steam pressure is higher than 3.1 bar [45 psig]).

**Self Cleaning Drain Strainer.** With this option the drain line is fitted with a drain strainer with valve on the strainer clean-out screen. During fast exhaust the strainer is cleaned of debris using steam flow.

**Chamber Polish Ra < 0.6  $\mu$ m (25  $\mu$ -in)** Instead of standard glass bead satin finish, inner chamber walls and doors are mechanically polished to minimum Ra 0.6  $\mu$ m or better. All chamber welds are ground smooth with this option.

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\*Refer to table on page 7 in regard to model numbers and associated chamber sizes.

**Plant Steam Condensate Return (Jacket)** Steam condensate pipe from jacket is configured to interface with Customer supplied condensate collection system. The option includes return piping to edge of skid and a steam trap.

**Chamber tracks** (located on the floor of the sterilizer chamber) are designed and positioned to allow easier loading of the loading cart. Tracks are sized and fixed for STERIS carts.

**Seismic Tie-down Kit** provides restraints, along with an anchoring report in conformance with the current seismic Zone 4 requirements of the California building code.

**Rub Rails** Rub rails are fitted to the sides of the chamber to guide carts and to protect the sides of the chamber. This option is recommended when chamber tracks are not provided.

**Stainless-Steel Steam Valve for Clean Steam** The standard bronze steam valves are replaced with stainless-steel steam valves, allowing use of clean steam.

**Utility Supervision and Monitoring** This option provides pressure switches and local monitoring pressure gauges for steam, domestic water, and compressed air lines. The following alarms will occur if operation conditions are not met:

- Compressed Air Pressure Low
- Water Pressure Low
- Steam Pressure Low

**VHP Ready (for portable VHP Sterilizer)** includes ports and control interface to allow use of a portable VHP sterilizer to sterilize heat labile products when the sterilizer chamber is not being used for steam sterilization. This option uses the STERIS VHP® 1000 ED sterilizer, sold separately.

**USB Port (for Cycle Data Download)** allows downloading cycle data in electronic TXT format from the operator interface.

**ProConnect® Technical Support Services** - Maximize operational efficiencies with secure, internet-based, real-time equipment monitoring. Data from your equipment is used by STERIS to provide pro-active Customer alert notifications, technical support, and predictive maintenance. Online parts ordering, equipment performance dashboards, and online service scheduling at [steris.com](http://steris.com) is also available. (ProConnect Technical Support Services is available in U.S. and Canada only.) Refer to Tech Data sheet SD983, *ProConnect Technical Support Services*, for details.

**Factory Acceptance Tests (FAT)** - The following two FAT options are available:

- **Customer Attended FAT.** This option includes factory time for Customer to witness FAT and FAT document. Price includes two days of testing, but does not include travel expenses. This option adds one week to the quoted ship date.
- **FAT Procedures and Results.** This option includes detailed factory test procedures and results. Factory tests include cycle test, critical alarm tests, and document verification.

## CYCLE DESCRIPTION

The sterilizer is factory-programmed with the following standard process cycles and with all optional cycle(s) selected

at time of order.

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## Standard Cycles

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**Prevacuum, Gravity and Liquid Cycle** The pre-vacuum cycle is a **standard** high vacuum cycle provided for sterilization of all dry goods and porous loads at 110-135°C (230-275°F). Preconditioning includes an air-removal phase using vacuum and steam pulses. Alternatively, preconditioning can use gravity removal. Gravity removal removes air from the chamber by introducing steam to force the air out through the drain line system.

The liquid cycle is provided for the sterilization of liquids and media in vented borosilicate glass or metal containers at 110-135°C (230-275°F). Liquid cycle post-conditioning can use slow exhaust or air over-pressure. Liquid cycle slow exhaust rates are user adjustable to minimize liquid loss. Air-over-pressure uses sterile air to prevent liquid from boiling during the cooling phase and minimizes liquid loss. Jacket steam is vented during cooling but cooling water is not circulated in the jacket. One load probe is required for liquid cycle.

Sterilization can be accomplished using an optional F<sub>0</sub> mode. Drying can be accomplished by fast exhaust, deep vacuum or vacuum pulsing. Pre-vacuum and post-vacuum pulses are programmable.

**Leak Test** is a **standard** test provided for verification of chamber and piping integrity. Test parameters are user-configurable. Default values for the leak rate test may be used, or specific leak rate test parameters may be configured in accordance with the Customer's Standard Operating Procedure (SOP).

**Warm-Up Cycle** is used to warm up the unit prior to Bowie-Dick test or running standard cycles after long shut-down period.

**Bowie-Dick Test** tests 121°C (250°F) prevacuum cycle for verification of effective air removal in chamber and load during testing. Test cycle determines if even and rapid steam penetration into test load has occurred. The cycle is pre-programmed per parameters set by the manufacturer of the Bowie-Dick Test pack.

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## Optional Cycles

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**Air-Over Pressure with Liquid Jacket Cooling** is an **optional** cycle designed to efficiently process liquid products packaged in either vented or non-vented (rigid) containers that require fast cooling during the post conditioning phase. The cooling phase is designed to cool the chamber by flowing cooling water through the jacket with simultaneous air over-pressurization in the chamber to minimize liquid loss. This process cools the load and prevents the product from boiling. Sterilizers that have this option also include the standard cycles (Pre-vac, gravity, and liquid). Note that one load probe is provided for use with the Air-Over Pressure with Liquid Jacket Cooling cycle.

**NOTE:** *The Liquid Air Cooling Cycle with Jacket Cooling is not available with Decontamination Cycle.*

**Effluent Decontamination Cycle** is an **optional** cycle used in situations where the chamber condensate may be contaminated and cannot be drained before sterilization is complete. During this cycle, steam is introduced into the chamber through the drain line, and all effluent is sterilized before discharge. Additionally the preconditioning phase uses vacuum pulses pulled through a dedicated 0.2 micron decontamination filter. The filter is automatically sterilized during the cycle. Sterilizers that have this option also include the standard cycles (Pre-vac, gravity, and liquid).

**Effluent Decontamination Cycle with VIRASURE™ Air Decontamination System.** This **optional** cycle includes VIRASURE Air Decontamination System to ensure sterilization of air and steam removed from the chamber during the preconditioning of the decontamination cycle. The air decontamination system uses an electrically heated stainless steel element design. The unit creates a torturous path at a high temperature to destroy living organisms and break down endotoxins, and provides redundant protection by means of a heated 0.1 micron stainless-steel strainer. The hot sterile air is cooled prior to flowing into the vacuum pump. Sterilizers with this option also include standard cycles (Pre-vac, gravity, and liquid).

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## CONSTRUCTION

### Pressure Vessel

The standard chamber pressure vessel is a fully jacketed-type that meets ASME or PED pressure vessel codes. The pressure vessel inner shell (chamber) and outer shell (jacket) are designed to withstand operating pressures from full vacuum to 3.1 bar (45 psig). The chamber is constructed of AISI 316L stainless steel. The chamber interior is glass-beaded to a fine finish.

In regard to insulation, the outer shell of the 304 stainless-steel jacket is covered with a two inch thick blanket of mineral wool, held in place by an aluminum cover.

The steam-supply openings, inside the chamber, are shielded by a baffle to evenly distribute the steam as it enters the chamber. A 63 mm (2-1/2") chamber penetration with TRI-CLAMP®<sup>1</sup> connections is provided for validation purposes.

### Chamber Door(s)

The door is constructed of AISI 316L stainless steel and insulated with mineral wool to reduce surface temperature of the stainless-steel door cover. The door is equipped with a one-piece, silicone sealing gasket. The gasket is activated by air pressure, and retracted by pulling a vacuum.

### Vacuum System

A two-stage, water ring seal-type pump is used for evacuating the sterilizer chamber. The pump can pull to a 3 psia vacuum in five minutes utilizing 20°C (68°F) cooling water.

### Air Filter

A 0.2 mm hydrophobic bacteria-retentive filter is used for chamber pressure equalization.

## Piping

The process piping for steam and sterile air to chamber, and drain piping up to the first valve, is constructed of AISI 316L stainless steel. All piping connections terminate within the confines of the sterilizer and are accessible from the right side of the sterilizer, when facing non-sterile (operating) end. All stainless-steel piping utilizes welded construction, TRI-CLAMP connections or threaded fittings. Other piping connections are screwed or compressed fittings. Bronze air-actuated valves are used to control the process. Optional stainless-steel valves are available for clean steam. Brass and copper or stainless-steel piping and components are used for utility water and non-process steam lines.

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## MOUNTING ARRANGEMENT

The sterilizer is designed for freestanding or recessed mounting through one or two walls. All sterilizer components are integrally mounted within the sterilizer confines of the footprints. Each sterilizer is equipped with adjustable leveling legs. Floor mounting or pit mounting is available.

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## ACCESSORIES

**Loading cart** is 316L electro-polished stainless steel with casters and removable shelves. Shelf spacing is in 150 mm (6") increments. Loading carts come in full or half size lengths.

**Half-Length Cart** is a loading cart manufactured to be half the length of the standard loading cart. The size of the half-length cart varies according to the chamber size. Includes one wire shelf.

**Shelves for loading cart.** Adjustable shelves can be added to accommodate various loads.

**Spare parts kit** containing selected mechanical and electrical components is provided. The kit includes a two year supply (with normal maintenance and operation of the sterilizer) of these selected items.

### Feed-Through Assembly for 36 Thermocouples -

As standard, the sterilizer is provided with one capped 63 mm (2-1/2") TRI-CLAMP chamber penetration for Customer validation purposes. The feed-through option provides one feed-through assembly for thirty-six thermocouples. The feed-through interfaces with the TRI-CLAMP chamber penetration, enabling insertion of thermocouples into the chamber. The TRI-CLAMP connection is made of AISI 316 L stainless steel.

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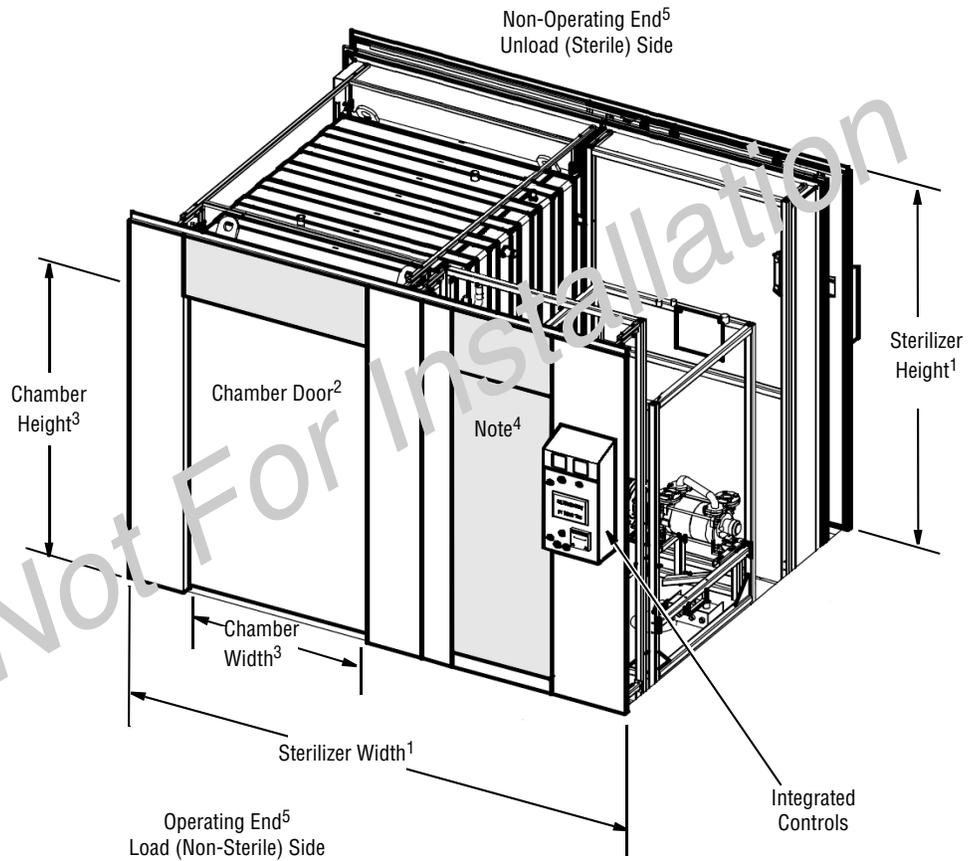
## PREVENTIVE MAINTENANCE

A global network of skilled service specialists can provide periodic inspections and adjustments to help assure low-cost peak performance. STERIS representatives can provide information regarding annual maintenance agreements.

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1. TRI-CLAMP® is a registered trademark of ALFA LAVAL, INC.

Refer to equipment drawings for installation details.



### AMSCO LSS Large Steam Sterilizer<sup>1</sup>

**NOTES:**

- 1 - Refer to equipment drawings for installation details.
- 2 - Illustration depicts chamber door on non-sterile side of unit. Units may be ordered with one or two doors (one door at each end of the chamber).
- 3 - Refer to Table 1 for model numbers and chamber dimensions.
- 4 - Gray-shaded regions indicate access to service areas.
- 5 - For Bioseal BSL-3/BSL-4, the operating end becomes the unload side and the non-operating end becomes the load side.

**Table 1. AMSCO LSS Large Steam Sterilizer Chamber Dimensions**

<b>LSS Model Number*</b>	<b>Internal Chamber Width and Height W x H – mm (inches)</b>	<b>Internal Chamber Depth</b>
LSS 91521	950 x 1550 mm (37 x 61")	2150 mm (85")
LSS 91821	950 x 1850 mm (37 x 73")	2150 mm (85")
LSS 92121	950 x 2150 mm (37 x 85")	2150 mm (85")
LSS 121821	1250 x 1850 mm (49 x 73")	2150 mm (85")
LSS 122121	1250 x 2150 mm (49 x 85")	2150 mm (85")
LSS 152121	1550 x 2150 mm (51 x 85")	2150 mm (85")
LSS 182121	1850 x 2150 mm (73 x 85")	2150 mm (85")

\*Additional sizes are available, please consult your local sales representative for details.  
See equipment drawings for load dimensions.

**Note:** Refer to equipment and installation drawings for Utility Usage Summary.

<b>Key to LSS Model Numbers</b>	
9	950 mm (37")
12	1250 mm (49")
15	1550 mm (61")
18	1850 mm (73")
21	2150 mm (85")
24	2450 mm (96")

**Example: LSS Chamber Size 12 21 21**  
 Internal Chamber Width = 1250 mm (49")  
 Internal Chamber Height = 2150 mm (85")  
 Internal Chamber Depth = 2150 mm (85")

## UTILITY REQUIREMENTS

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### Steam

NPT male  
2.8 ±0.3 bar (40 ±5 psig)  
97-100% vapor quality

### Drain

2-1/2" ODT gravity discharge

### Feed Water (Facility Supplied)

NPT male  
1-3 bar (14-45 psig)  
20°C (68°F) max.  
pH 7  
125 ppm CaCO<sub>3</sub> (max. hardness)  
Water is used for vacuum pump sealing, drain cooling and jacket cooling.

### Cooling Water Savings Package (Optional)

NPT male  
3-6 bar (44-87 psig)  
20°C (68°F) max.  
ΔT is approximately 15°C (59°F)  
ΔP is approximately 1 bar (15 psig)  
Water is used for cooling of vacuum pump and drain.

### Compressed Air

NPT male  
5-8 bar (73-120 psig)

### Chamber Safety Relief

NPT male  
3.1 bar (45 psig) max.

### Jacket Safety Relief

NPT male  
3.1 bar (45 psig) max.

### Electricity Options for Sterilizer (all are 3 phase)

208 V, 60 Hz  
230 V, 50 Hz  
240 V, 60 Hz  
480 V, 60 Hz  
600 V, 60 Hz  
400 V, 50 Hz

### Requirements for ProConnect Technical Support Services

Refer to Tech Data sheet SD983, *ProConnect Technical Support Services*. (Available in U.S. and Canada only.)

## CUSTOMER IS RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE LOCAL AND NATIONAL CODES AND REGULATIONS.

The base language of this document is **ENGLISH**. Any translations must be made from the base language document.

### NOTES

1. Utility connection sizes and flow rates are dependent on the chamber size selected. Refer to STERIS equipment and installation drawings for details.
2. Dry, oil free, compressed air is required.
3. The drain line should have a 51 mm (2") air-gap to prevent backflow.
4. The pipe sizes shown indicate terminal outlets only. Building service lines, not provided by STERIS, must supply the specified pressures and flow rates.
5. A non-fused, pad-lockable disconnect switch is provided with the sterilizer. A fused disconnect next to the unit is recommended per local codes.\*
6. Recommended drain is 305 x 305 x 299 mm (12 x 12 x 11-3/4") floor sink with 102 mm (4") drain pipe. Top plate must have 76 mm (3") hole centered over drain. Drain pipe should be suitable for 60°C (140°F). High temperature drain piping is recommended.
7. Pit should have 51 x 51 x 5 mm (2 x 2 x 3/16") stainless-steel angle around the perimeter.†
8. Bioseal shall have stainless-steel in-beds installed in the wall for welded angle frame assembly.‡
9. Additional pipes or structures should not be placed in the service area. STERIS must be consulted for this situation.

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\* A fused disconnect is not supplied or installed by STERIS. A non-fused, pad-lockable disconnect switch is provided with the sterilizer.

† A pit angle frame is not supplied or installed by STERIS.

‡ Bioseal wall in-beds are not supplied or installed by STERIS.

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## For Further Information, contact:



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