

SUBMITTALS IDENTIFICATION SHEET

PROJECT: Canadian High Arctic Research Station Cambridge Bay, Nunavut		DEPT. REP.: PWGSC	
		Construction Manager: EllisDon	
		O/REF.: R042393.002	Package:
CONTRACTOR: ELLISDON		ARCHITECT: FGMDA/NFOE Architects	
Assistant Project Manager: DAVE WINCEY		Project no.: 879-12-00/11084	
Telephone: 613-688-9176		ENGINEER: SNC-LAVALIN Inc.	
E-mail: dwincey@ellisdon.com		Project no.: 610920	
SUBCONTRACTOR: STERIS		DISCIPLINE: ARCHITECTURAL	
Address:			
		PRODUCT SUBMITTED:	
Person responsible: Sonia Silga		<input checked="" type="checkbox"/> As Specified	
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SUPPLIER or MANUFACTURER: SAME AS ABOVE			
Address:			
Person responsible:			
Telephone: E-mail:			
DESCRIPTION OF SUBMITTAL:			
LABORATORY STERILIZERS			
# of pages: 28			
Reference to drawings:			
Reference to specs:			
Division: 11		Section: 11 53 19	
Article: 1.4		Page: 2	
Product abbreviation:			
REMARKS:			
<p><i>* for Building coordination only.</i></p> <p>Review of this submission is for compliance with general intent of the contract. This review does not relieve the Sub-Contractor, Supplier or Manufacturer of responsibility for error or omissions in the submission or the responsibility of meeting all requirements of the contract documents. Any deviation from the contract documents initiated by the Sub-Contractor, Supplier or Manufacturer shall be at their sole risk. QUANTITIES AND DETAIL DIMENSIONS ARE THE SUB-CONTRACTORS OR SUPPLIERS RESPONSIBILITY. VERIFY DATA WITH FIELD DIMENSIONS.</p>			
SUBMITTAL TRACKING No.: CHARS-PK3-A-11-53-19.01		Date: MAY 12, 2016 Rev.: 0	

For equipment services coordination:

*Building water supply conditioned to water hardness of 60 to 145 mg/L
Please confirm this is suitable for equipment.*

70033 - Canadian High Arctic Research Station

Date: 2016-May-12

Page: 1 of 1

To: FGMDA/NFOE

D. Ellis
511 Place d'Armes
Bureau 100
Montréal, QC, H2Y 2W7

From: JPFortin, Services Conseils

Jean-Pierre Fortin

Subject: CHARS - 11 53 19-2 (r.0)

Ref #: CHARS PK3-A-11 53 19.01

Work Group #: 11

Submission item #: 11 53 19 – LABORATORY STERILIZERS - 2(0)

Submitted documents:

- Submittals ID sheet;
- Steris transmittal sheet, Submittals for PO #40132-6-1121-SN/Steris Order #8735717;
- Approval form;
- Equipment detail sheet;
- Equipment specifications & option detail;
- Accessories selection & specifications sheet;
- Drawing and utilities requirements #387362-524, 3 pages;
- General note applicable to washers' equipment drawing;

Review:

I consider that the documents submitted reflect correctly the accepted quote and provide the necessary and expected details. They are, therefore, to be considered as mostly compliant and the approval form should be completed as «Approved as noted, resubmittal not required». This is because one installation drawing is missing. Accordingly, even if a complete resubmittal is not required, Steris must provide the said document (drawing #62941-091) as soon as possible.

The appropriate space on the Comments & Clarifications page should therefore be completed as follow:

«On sheet 3 of 3 of drawing package #387362-524, Note #1 mentions:

«For general installation information, see Steris drawing No. 62941-091 (This drawing should always accompany the equipment drawing). If drawing #62941-091 is not attached,...»

As a matter of fact, drawing #62941-091 is not part of this package and should be provided by Steris.»



STERIS Corporation Equipment Submittal

TRANSMITTAL

Total number of pages: 1 of 1

May 11, 2016

To: ELLISDON CORPORATION
Address: 140 THAD JOHNSON RD
OTTAWA, ON, K1V 0R4, CA
Attn: NORM LAUZON
Ph: 613-565-2680 EX 9165
Email: nlauzon@ellisdon.com

From: Sonia Silga
5960 Heisley Rd
Mentor OH 44060
Ph: 440-392-7475
FX: 440-350-7077
Email: Sonia_silga@steris.com

PO # 40132-6-1122-SN
STERIS Order # 8735717

STERIS IS TRANSMITTING:

Copies	Date	Description	Rev.
1	05/12/16	Equipment Submittals for Approval	0

- ☒ Approval Needed
☐ For Reference Only
☐ Certified for Construction

Comments:

cc: Daniel Caron
Jean Rioux
Mike Palmer

APPROVAL FORM

Date: 5/12/16

PROJECT: ELLISDON CORPORATION**PO: 40132-6-1122-SN****STERIS ORDER: 8735717**

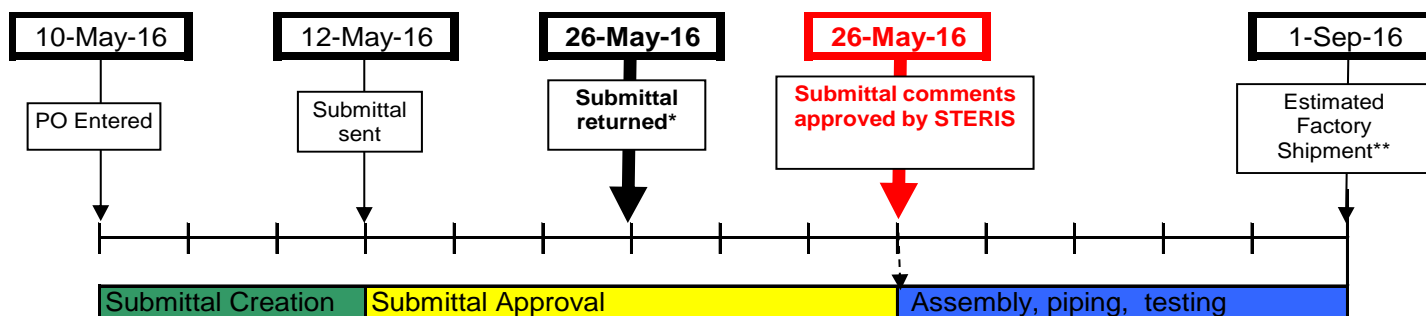
STERIS would like to thank you for your recent order. This equipment package relates to the items specified by your purchase order number referenced above. It is the intent of this package to promote a clear understanding (between all parties) of the space requirements for and mechanical details of the equipment to be furnished by STERIS Corporation.

The enclosed documents describe equipment only as it is routinely manufactured to conform to the standards cited in those documents and statutory requirements prevailing in most communities in which the equipment likely would be installed.

Unless specifically called for in your invitation for bids, request for quotations, contract, or order, the said equipment will not include any different or additional devices or appurtenances that might be required by specific local electrical, plumbing and other statutory requirements.

Key points to consider:

- ✓ This copy then will be regarded as an integral part of your order or contract.
- ✓ Fabrication of the equipment shall be in accordance with this signed, approved Equipment Submittal. **Manufacturing of the equipment will not begin until the signed submittal is returned and all submittal comments are approved by STERIS*. The dates indicated below must be met in order to maintain the estimated factory shipment schedule.**



**Early return of submittal drawings does not guarantee improved factory shipment. Contact your STERIS representative to confirm if expedited shipment is possible.*

***Estimated factory shipment is based on the above schedule and the current factory capacity, however, factory shipment is subject to change based on receipt of long lead parts, receipt of approved submittals, factory capacity changes, design changes made after certified or approved drawing release, or other unforeseen circumstances. STERIS will provide schedule updates if any of these or other events occur.*

- ✓ Any and all notations made by you, the Customer, on this signed copy of the submittal must be reviewed by your STERIS Account Manager to determine any adjustments to the original contract price as well as original quoted lead-time. A revised quote and STERIS Change Acknowledgement Form will be submitted to you in order to confirm changes.
- ✓ **Sign and return one (1) copy of this submittal by May 26th either via email, fax or hard copy mail to:**

Sonia Silga
STERIS Corporation
5960 Heisley Rd.
Mentor, OH 44060
Ph: 440-392-7475
FX: 440-350-7077
Email: Sonia_silga@steris.com

APPROVAL FORM

Date: 5/12/16

PROJECT: ELLISDON CORPORATION

PO: 40132-6-1122-SN

STERIS ORDER: 8735717

Please check one of the boxes below:

☐

Approved as is

☐

Approved as noted

- Resubmittal **NOT** required

☐

Rejected

☐

Approved as noted

- Resubmittal required

Customer Approval Signature: _____

Date: _____

Required On-Site Equipment Date: _____

STERIS Representative Approval Signature: _____

Date: _____

APPROVAL FORM

Date: 5/12/16

PROJECT: ELLISDON CORPORATION

PO: 40132-6-1122-SN

STERIS ORDER: 8735717

STERIS®



Comments & Clarifications - *Please utilize the below section to detail any comments, questions, or exceptions noted throughout this submittal package.

TAB # _____
ITEM # _____
COMMENT:

TAB # _____
ITEM # _____
COMMENT:

TAB # _____
ITEM # _____
COMMENT:

TAB # _____
ITEM # _____
COMMENT:

3 EA- Amsco® Lab 250 Small Scientific Laboratory Steam Sterilizer, 20 X 20 X38

SF82133512A3002000

- Vacuum
- Manual Vertical Sliding Door(s)
- Double Door with operator panel on both sides
- Cabinet, Recessed 1 Wall, Sterile Side, Double Door
- Standard Piping: Brass and Copper Threaded
- Electric Steam Generator - Carbon Steel
- 120 V, 1 Ph, 600 V, 3 Ph (Canada Only) *
- Air Diff Seal on Clean Side (vessel body on dirty side) - Recessed 1 Wall
- Vacuum Pump Upgrade (3-Ph Required) - Lab 110/250
- No Special Code Approvals Required
- English Language

3 EA- Loading Rack & Two Shelves-20X20X38" Sterilizer For Double Door Unit Only

FV022005

1 EA- Full Spare Parts Package - Lab 110/250 Sterilizer

PPS000014

3 EA- PM Pack - Lab 110/250 Vac/Grav Brass & Copper

P764335665

3 EA- PM Pack - Lab 110/250 Generator Add On (Carbon)

P764335667

APPLICATION

AMSCO Lab 250 and AMSCO Lab 110 Small Sterilizers are designed for use in laboratory and industrial applications. Three sterilizer configurations are available.

- **Gravity** – designed for sterilization of non-porous heat- and moisture-stable goods, sterilization of liquids and media in borosilicate glass containers with vented closures, and decontamination of supplies after laboratory procedures. The gravity sterilizer is equipped with gravity and liquid cycles.
- **Prevacuum** – designed for fast, efficient sterilization of porous, heat- and moisture-stable materials, in addition to the same sterilization capabilities as the gravity sterilizer. The prevacuum sterilizer is equipped with prevacuum, gravity, liquid, leak test and daily air removal test cycles. The vacuum level as well as the charge level for the prevac pulses are adjustable.
- **Isothermal** – designed for low temperature sterilization of heat-sensitive and heat-coagulable materials in addition to the same sterilization capabilities as the gravity sterilizer. The isothermal sterilizer is equipped with isothermal, gravity and liquid cycles.

Configuration includes choice of a single or double door, for open or recessed mounting.

NOTE: Recess two wall mounting not available for Lab 110 double door sterilizers.



(Typical - details may vary.)

Selections Checked Below Apply To This Equipment

MODEL/CHAMBER SIZE (W x H x L)

- ☐ **Lab 110** – 16 x 16 x 26" (406 x 406 x 660 mm)
- ☐ Gravity ☐ Prevacuum ☐ Isothermal
(LG-110) (LV-110) (LI-110)
- ☐ **Lab 250** – 20 x 20 x 38" (508 x 508 x 965 mm)
- ☐ Gravity ☐ Prevacuum ☐ Isothermal
(LG-250) (LV-250) (LI-250)

STEAM SOURCE

- ☐ Building Steam
- ☐ Stand Alone Electric Steam Generator
- ☐ STERIS Provided ☐ Customer Provided
- ☐ **Integral Electric Steam Generator¹**
- ☐ Carbon Steel ☐ Stainless Steel
- Voltage Options*
- ☐ 208 Volt, 60 Hz
- ☐ 240 Volt, 60 Hz
- ☐ 400 Volt, 50 Hz
- ☐ 480 Volt, 60 Hz
- ☐ **600 Volt, 60 Hz**
- ☐ Integral Indirect Stainless-Steel Clean Steam Generator (SD589)

SINGLE DOOR

- ☐ Cabinet Enclosed/Freestanding
- ☐ Recessed

DOUBLE DOOR

- ☐ **Recessed through One Wall**
- ☐ Sterile side ☐ Non-sterile side
- ☐ Recessed through Two Walls²

OPTIONS

- ☐ Power Door(s)
- ☐ Liquid Air Cool (w/vacuum)
- ☐ Decontamination Cycle³
- ☐ Pure Steam Piping to Chamber
- ☐ without Pressure Reducing Valve
- ☐ with Pressure Reducing Valve

- ☐ Air Detector System
- ☐ Reference Recorder
- ☐ Right Hand Piping
- ☐ Printer on Both Ends⁸
- ☐ Bio-Seal^{3, 4}
- ☐ RTD Load Probe(s) and F₀ Sterilization
- ☐ One Probe ☐ Two Probes (max. 2)
- ☐ Drain Line Reference Probe
- ☐ **Air-Differential Seal (NOE) for Double Door Units**
- ☐ Back Panel for Single Door Cabinet Enclosed Unit
- ☐ 1" Chamber Penetration, Qty. 1 (Lab 110 only)⁵
- ☐ One Additional Chamber Penetration (Lab 250)⁵
- ☐ **Vacuum Pump (3-Ph required)**
- ☐ 120 V, 1-Ph / 208 / 240 Vac, 3-Ph
- ☐ 120 V, 1 Ph / 240 Vac 3-Ph
- ☐ 120 V, 1-Ph / 480 Vac, 3-Ph
- ☐ **120 V, 1-Ph / 600 Vac, 3-Ph**
- ☐ 230 V, 1 Ph / 400 Vac, 3-Ph (International)
- ☐ Other - Specify _____
- ☐ **Backflow Preventer**
- ☐ Auto Flush for Steam Generator
- ☐ 0.2 Micron Bacterial Retentive Filter
- ☐ Visible Pressure Gauges
- ☐ Green Gravity Water Saver System
- ☐ Water Ejector & Closed Loop Chilled Water System (Drain Only)
- ☐ Vacuum Pump & Closed Loop Chilled Water System
- ☐ Drain Only ☐ Vacuum & Drain

ACCESSORIES (for Lab 110)⁶

- ☐ One Intermediate Shelf (16 x 16 x 26")
- ☐ Seismic Tie-Down Kit⁷
- ☐ Air Compressor, Portable, 115 Vac

ACCESSORIES (for Lab 250)

- ☐ One Intermediate Shelf (20 x 20 x 38")
- ☐ Seismic Tie-Down Kit⁷
- ☐ Air Compressor, Portable, 115 Vac
- ☐ **Loading Rack and Two Shelves (20 x 20 x 38")**
- ☐ Single Door ☐ **Double Door**
- ☐ Loading Car
- ☐ Transfer Carriage
- ☐ Chamber Track Assembly
- ☐ Single Door ☐ Double Door
- ☐ Loading Car, Transfer Carriage & Chamber Track Assembly
- ☐ Single Door ☐ Double Door
- ☐ Multiprobe Sealing Gland (20 x 20 x 38")
- ☐ AMSCO™ Stand Alone Water Conservation System

Notes:

1. Lab 110 double door sterilizers are not available with an integral electric steam generator.
2. Available for Lab 250 double door sterilizers only. Contact engineering if mounting through two walls is required for a Lab 110 sterilizer.
3. Units with decontamination and/or bio-seal options require UL/CSA field certification.
4. Available on Lab 250 double manual door sterilizers only.
5. One chamber penetration is standard on Lab 250.
6. Loading rack & 2 shelves is standard on Lab 110.
7. Based on CA requirements.
8. Printer at operating end is standard. Option adds additional printer to non-operating end.

Item _____

Location(s) _____

DESCRIPTION

AMSCO Lab 250 and Lab 110 Small Sterilizers for life science applications are the next advancement in the STERIS line of steam-jacketed sterilizers. Both sterilizers are equipped with the latest features in state of the art technology and ease of use.

Primary Product Features

Interior Chamber Dimensions

- **Lab 110** – 16 x 16 x 26" (406 x 406 x 660 mm)
- **Lab 250** – 20 x 20 x 38" (508 x 508 x 965 mm)

Allen-Bradley MicroLogix™ control system with enhanced functionality and user-friendly A-B PanelView Plus™ 6 600 interface screen.¹

- Touch-sensitive screen with 18-bit color graphic display
- Display features 320 x 240 resolution color-active matrix
- Display is designed with emphasis on human factors and user recognizable symbols
- **20 cycles** may be individually selected and programmed
- Compact Flash (CF-Card) memory card slot on operator panel for memory backup/restore
- Help screens for control operation
- Service reprogrammable flash ROM memory
- Program permanently stored in flash memory
- Variables permanently stored in flash memory

Vertical sliding door with manual operation.

- Non-lubricated, steam activated door seal

Modularized vessel and piping for increased dependability and reduced servicing time.

- Reduced piping components increase reliability
- Vessel design allows higher operating temperature (141°C [285°F])
- Non-clogging chamber drain line prevents media from plugging drain line
- Emergency manual exhaust valve

STANDARDS

Each sterilizer meets applicable requirements of the following listings and standards, and carries the appropriate symbols.

- **Underwriters Laboratory (UL) Standard 61010-1** as certified by ETL Testing Laboratories, Inc. (Some units with multiple options are not UL approved.)
- **Canadian Standards Association (CSA) Standard C22.2 No. 61010-1.**
- **ASME Code, Section VIII, Division 1** for unfired pressure vessels. The pressure vessel is so stamped; ASME Form U-1 is furnished. Shell and door are constructed to withstand working pressure of 50 psig (344.7 kPa).
- **ASME Code, Section I, Part PMB** for power boilers, if optional steam generator is supplied.
- **Seismic Pre-Approval R-0272** (for Lab 110)
Seismic Pre-Approval R-0275 (for Lab 250)
- **EMC Directive:** 2004/108/EC, 93/68/EEC, 92/31/EEC, 89/336/EEC.

- **Low Voltage Directive:** 2006/95/EC, 93/68/EEC, 72/23/EEC.
- **Machinery Directive (MD):** 2006/42/EC, 98/37/EEC, 93/68/EEC, 91/368/EEC, 89/392/EEC.
- **Pressure Equipment Directive (PED):** 97/23/EC.

FEATURES

Hinged front cabinet panel entirely opens for convenient access to sterilizer piping and control system.

Resistance Temperature Detectors (RTDs) are installed for sterilizer temperature control. The chamber drain line RTD senses and controls temperature variations within the sterilizer chamber. A jacket RTD provides temperature control within the jacket space. These RTD signals, converted into electrical impulses, provide accurate control inputs and readouts throughout entire cycle.

Software calibration is provided for all temperature and pressure inputs. Calibration is performed in the service mode, accessible through the touch screen displays, and accomplished using external or internal temperature and pressure sources. Control system provides a printed record of all calibration data for verification to current readings.

RS-232 interface port is provided for downloading cycle information to Customer-furnished data acquisition system.

Optimal solution cooling is designed to safely cool various liquids in vented, borosilicate glass containers with minimum liquid loss due to boil-over, and to keep normal evaporation loss below 5%. Optimal solution cooling is an integral part of the factory-programmed liquid cycle. During the exhaust (cooling) phase, the control utilizes this feature to optimize the exhaust rate regardless of load size or container fill volume. During cooling, the initial rate, initial rate transition point, as well as the second rate and final vacuum level are adjustable.

Automatic utilities startup/shutdown permits slow cooling of the entire vessel and load. Shutdown may be programmed to activate at the end of any designated cycle or time of day. When activated, control system automatically shuts off all utility valves, conserving steam and water usage. Sterilizer utilities can be restarted either by programmed time or manual operation. A different shutdown and restart time can be programmed for each day.

Steam purge feature is provided to assist in air removal and preheat the load.

Automatic steam shutoff to jacket is provided for isothermal and liquid cycles. When activated for isothermal cycles, the jacket control conducts a timed jacket drain, automatically allowing for the operation of cycles at lower temperatures. When activated for liquid cycles, steam supply to the jacket is turned off during exhaust phase, allowing load to cool more efficiently.

Insulation, one-inch thick, asbestos-free spin-glass (rated at 500 °F [260 °C] continuous) encompasses the exterior of the sterilizer vessel and is sealed in an oil and water resistant outer jacket.

Lighted DIN connectors are installed on all steam, water, and exhaust valves for reliability and ease of maintenance.

Air Backup to seals is provided on all double door sterilizers, with either bioseal or air differential seals.

¹ Allen-Bradley MicroLogix™ and Allen-Bradley PanelView Plus™ are registered trademarks of Rockwell Automation, Inc.

CYCLE DESCRIPTION

Sterilizer is factory-programmed with the following applicable sterilizing cycles:

- **Gravity Cycle**, provided on gravity, prevacuum, and isothermal sterilizers, for sterilization of heat- and moisture-stable goods at 100°C to 141°C (212°F to 285°F), and decontamination of bagged non bio-hazardous laboratory wastes. Gravity cycle utilizes gravity air-displacement principle.
- **Liquid Cycle**, provided on gravity, prevacuum, and isothermal sterilizers, for sterilization of liquids and media in vented borosilicate glass or metal containers at 100°C to 135°C (212°F to 275°F). Liquid cycle utilizes optimal solution cooling feature, during exhaust (cooling) phase, to control exhaust rate.
- **Prevacuum Cycle**, provided only on prevacuum sterilizer, for efficient, high-volume sterilization of porous, heat- and moisture-stable materials at 100°C to 141°C (212°F to 285°F). Prevacuum cycle utilizes a mechanical air-evacuation system.
- **Isothermal Cycle**, provided only on isothermal sterilizer, for processing of heat-sensitive and heat-coagulable solutions in vented borosilicate glass or metal containers at 78°C to 104°C (170°F to 219°F). Isothermal cycle utilizes steam to enhance temperature control and prevent layering of steam and air within the chamber. Process maintains positive pressure in chamber to inhibit media boiling.
- **Liquid Air Cool (Optional)** provides water to jacket, and air pressure to chamber to improve exhaust time for liquid loads, and to reduce boil-over.
- **Effluent Decontamination Cycle (Optional)** is used for processing contaminated laboratory waste (BL-3 and BL-4). Condensate produced during processing cycle is decontaminated before discharge to floor drain. Steam is admitted through bottom of sterilizer chamber, and chamber is exhausted out top side of vessel. During purge and vacuum pulses, all purge and exhaust gases are vented through a 0.2 micron bacterial retentive filter. Filter housing is steam jacketed to prevent wetting of filter membrane. Available with fast exhaust or optimal solution cooling (slow exhaust) exhaust types. User is responsible for development of process parameters.
- **Leak Test Cycle**, provided only on prevacuum sterilizer, for verification of door seal and piping system integrity. Cycle parameters are pre-programmed and fixed. Acceptable maximum leak rate is 1.0 mm Hg/minute over a 10-minute period following a fixed stabilization time.
- **Daily Air Removal Test (Dart) Cycle**, provided only on prevacuum sterilizer, for verification of effective removal of residual air in chamber and load during testing. Test cycle determines if even and rapid steam penetration into test load occurred. Cycle parameters are preprogrammed and fixed.
- **Bowie-Dick Test** is available for 121°C (250°F) prevacuum cycles.

CONTROL SYSTEM

Design Features

Together, Allen-Bradley MicroLogix™ 1200 PLC control and PanelView Plus™ 6 600 display, monitor and control all sterilizer operations and functions. Control system is factory-programmed with standard sterilizing cycles. Each cycle is adjustable to meet specific processing requirements. All control configuring is performed through touch screen displays.

Cycle values and operating features may be adjusted and verified prior to cycle operation. Once cycle is started, cycles and cycle values cannot be changed until cycle is complete. On completion of cycle, timers reset to the previously selected values, eliminating the need to reset values between repeated cycles. If chamber temperature drops below the under temperature setting during the exposure phase, timer can be set to stop and automatically reset or resume once normal operating temperature is reached.

Critical control system components are housed within a sealed compartment to protect components from moisture and heat generated during sterilization process.

Operator interface control panel, consisting of touch screen and impact printer, is located on operating (load or nonsterile) end of sterilizer. If sterilizer is equipped with double doors, an additional touch screen is provided on sterilizer's non-operating (unload or sterile) end.

- **Touch-Sensitive Screen** features a color active matrix 18-bit graphics display. All sterilizer functions, including cycle initiation and cycle configuration, are operated by pressing the touch-sensitive areas on the display, referred to as buttons. Display indicates appropriate control buttons, operator prompts and status messages necessary to assist in sterilizer operation. All displayed messages are complete phrases with no codes to be cross-referenced. Display also indicates any abnormal conditions that may exist either in or out of a cycle.
- **Ink-On-Paper Impact Printer**, located above touch screen, provides an easy-to-read printed record of all pertinent cycle data on 2-1/4" wide paper. Data is automatically printed at the beginning and end of each cycle and at transition points during the cycle. A duplicate print can be obtained of the last cycle run.

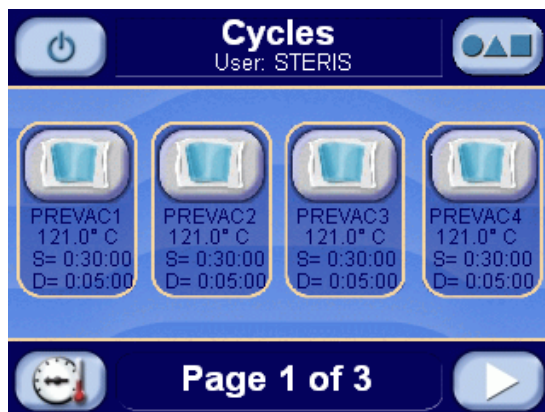
Printer take-up spool stores an entire roll of paper, providing cycle records which can be saved for future reference. Three paper tape rolls are furnished with each unit.

- **Non-operating end (NOE) control panel** (equipped on double-door sterilizers only) includes a touch-sensitive screen similar to the operating end screen. Preprogrammed cycles can be started from the NOE control panel. Display concurrently shows the same information as the operating end screen display.

Cycle configuration is performed by accessing the **change values** menu on either end of a double door sterilizer. Utility shutdown parameters can only be changed on the OE display. In addition to adjustment of cycle values, the following operating parameters can also be changed through the change values menu:

- **Time Display and Printout Units** in standard AM/PM or 24-hour military (MIL) time.

- **Selectable Cycle Name** permits user to name each cycle with any combination of letters, numbers, blank spaces, and underscores, up to eight characters long.
- **Print Interval** permits adjustment of the time period between cycle-status printouts generated during the sterilize phase.
- **Security access code** is required to enter the operating mode (running cycles), supervisor mode (changing values), and service mode. Operating the sterilizer or accessing change values menu causes display to request the entry of an access code. If access code is not properly entered, display returns to the standby screen, denying user access to the sterilizer or programming. Access to the sterilizer can be limited to 12 operators, each with a different access code.
- **Buzzer** pulses on and off during alarm conditions. Buzzer pulses at a different rate for one minute at cycle completion.
- **Temperature Display and Printout Units** in Celsius (°C) or Fahrenheit (°F). Temperature is set, displayed, controlled, and printed to the nearest 0.1°. Recalibration is not required when changing temperature units from °C to °F and vice versa.
- **Pressure/Vacuum Display and Printout Units** in psig/In/Hg, Bar (Gauge). Recalibration is not required when changing pressure units.
- **Compact flash port** is provided for downloading cycle information to a Customer-furnished Excel spreadsheet file1. Approximately eight (one hour) cycles can be stored on the flash card before the card has to be downloaded to PC.
- **Flash memory** permanently backs up all cycle memory. If a power failure occurs during a cycle, proper cycle completion occurs once power is restored. When power is lost, the cycle is held in phase until power is restored, exceeding the minimum government specification of one minute. Once power returns, the event is recorded on the printout and the cycle automatically resumes or restarts, depending on what phase the cycle was in at the time of power loss. If necessary, the operator can manually abort the cycle.



Typical Cycle Menu Display

SAFETY FEATURES

Control lockout switch (equipped on chamber door) senses when door seal is energized and tight against the door. Control prevents cycle from starting until the limit switch signal is received. If control loses appropriate signal during cycle, alarm

activates, cycle aborts, and chamber safely vents with a controlled exhaust.

Chamber float switch activates alarm, aborts cycle, and safely vents chamber with a controlled exhaust if excessive condensate is detected in the vessel chamber.

Door interlocks (double door units only) allow only one door to be opened at a time and, during processing, prevent the non-operating end (NOE) door from being opened until a satisfactory cycle is complete. If a cycle is aborted, the NOE door cannot be opened. (Compressed air utility required).

Pressure relief valve limits the amount of pressure buildup so that the rated pressure in the vessel is not exceeded.

Emergency stop button (located on front of the sterilizer) is included on all sterilizers manufactured with a power door. For units marked with CE label, a key is required to release the emergency stop (once pushed) before the unit can return to normal operation.

CONSTRUCTION

Shell Assembly

Two fabricated Type 316L stainless-steel shells, welded one within the other, form the sterilizer vessel. Type 316L stainless-steel end frame(s) is welded to door end. On single door units, back of chamber is fitted with welded, 316L stainless-steel formed head.

Sterilizer vessel is ASME rated at 50 psig (3.2 Bar) and insulated. The Vessel (for Lab 250 only) includes one 1.0" (25 mm) NPT welded chamber bushing for Customer use.

Steam-supply opening inside the chamber is shielded by a Type 316L stainless-steel baffle.

Chamber Door(s)

Door is constructed of a single formed piece of Type 316L stainless steel. Door is insulated to reduce the surface temperature of the stainless-steel door cover.

During cycle operation, door is sealed by a steam-activated door seal. Door seal is constructed of a special long-life rubber compound. When sterilizer cycle is complete, the seal retracts under vacuum into a machined groove in the sterilizer's end frame. Door seal can be manually retracted to open the door and remove critical load in an emergency situation (if loss of vacuum or loss of power occurs).

A handle is used to manually open (by lowering) and manually close (by raising) the door which is suspended by cables attached to a counterweight.

A long-life proximity switch is used, by the control, to determine if the door is closed. An additional seal pressure switch prevents inadvertent cycle initiation if door is not sealed.

The door assembly is equipped with a mechanical locking mechanism that ensures the door cannot be opened, as long as the seal is intact and energized, and more than 2.0 psi pressure is in the chamber. Door interlocks on double door sterilizers can be programmed to prevent inadvertent opening of door(s). Access code is required to override door interlocks.

NOTE: Bio-Seal option is available for Lab 250, double manual door sterilizers, as discussed on page 5.

Chamber Drain System

Drain system is designed to prevent pollutants from entering into the water-supply system and sterilizer. An optional backflow preventer is available. Water supply shutoff valve is located behind the front cabinet service panel under the chamber.

Automatic Drain Effluent Cooling

The piping system to the drain provides automatic condensing of chamber steam and disposal of condensate to waste. Cooling water is added to ensure discharge temperature is discharged at or below 60°C (140°F). A separate resistance temperature detector (RTD) is included to limit the volume of water to only the amount required to achieve target temperature, thus conserving water.

Vacuum System (Prevacuum Units Only)

Water ejector reduces chamber pressure during prevacuum and post-drying phases. Air is drawn from the chamber through the vacuum system. Following dry phase, chamber vacuum is relieved to atmospheric pressure by admitting air through a bacteria-retentive filter.

Vacuum System (International Prevacuum Units Only)

The vacuum pump reduces chamber pressure during prevacuum and post-drying phases. Air is drawn from the chamber through the vacuum system. Following the dry phase, the chamber vacuum is relieved to atmospheric pressure by admitting air through a bacteria-retentive filter.

Steam Source

Sterilizers are piped valved, and trapped to receive building-supplied steam delivered at 50 to 80 psig (344.7 to 551.6 kPa) dynamic. If building steam source is not available, an electric carbon-steel steam generator or electric stainless-steel steam generator may be provided to supply steam to the sterilizer. Steam piping is constructed of brass and includes a shutoff valve, steam strainer and a brass pressure regulator.

Optional stainless-steel indirect-type steam generator can be installed as a pure steam source. Pure steam reduces the probability of contamination which could adversely affect research, such as tissue culture and trace metals studies.

Steam feeds from the jacket to the chamber. A check valve is added between the jacket and chamber on sterilizers with decontamination cycle option.

Piping

All piping connections terminate within the confines of the sterilizer and are accessible from the front and side of sterilizer.

- **Solenoid Valves** in manifold with DIN connectors simplify sterilizer piping and can be serviced individually.
- **Manual Shutoff Valves** are pressure rated at 125 psig (862 kPa) for saturated steam. Valve handles are low-heat conducting.

MOUNTING ARRANGEMENT

Sterilizers are arranged for either freestanding or recessed installation, as specified. Each sterilizer is equipped with a height-adjustable, steel floor stand. Sterilizer subframe is equipped with a synthetic rubber gasket to ensure tight fit between the cabinet panels on freestanding units or between

the front cabinet panel and wall partition on recessed units.

On freestanding units, stainless-steel side panels enclose the sterilizer body and piping.

Each Lab 110 and Lab 250 sterilizer has a lockable front service panel.

OPTIONS

Pure steam piping to chamber delivers steam generated from Customer purified water source to the chamber and its contents. All steam-to-chamber piping components are constructed of 300 series stainless steel. Option can be provided with or without Pressure Reducing Valve.

Integral indirect stainless-steel clean steam generator automatically produces clean steam using Customer-supplied steam and purified water. Generator is integrally connected to the clean steam-to-chamber piping system.

30 kW carbon-steel electric steam generator typically fed by a potable water source with hardness not to exceed 171 mg/L. The generator is available for both single and double door sterilizers. The generator is mounted underneath both single and double door units. The generator option is not available for Lab 110 double door units.

30 kW electric stainless-steel steam generator is electrically powered, automatically filled with water having 1 MΩ·cm resistivity, and operates whenever the sterilizer power is on. Generator is integrally connected to the clean steam-to-chamber piping system. The generator option is not available for Lab 110 double door units.

Auto Flush for Steam Generator provides automatic flush of steam generator upon startup of sterilizer. Can be by-passed by pressing Cancel. Not required for SS generators.

RTD load probes and F₀ sterilization (maximum of 2) automatically sense the load temperature during cycle operation. A single thermal load probe is sealed through the sterilizer vessel and manually placed in the product container within the chamber prior to cycle operation.

In conjunction with the load probe option, individual cycles can be set to start exposure phase according to chamber drain temperature or according to load temperature. Also, F₀ set points are available for each cycle, allowing for exposure phase termination based on the calculated F₀ value.

Bio-seal (for Lab 250 double manual door units only) is a 1/4" steel plate which is welded to the chamber and a 1/4" thick silicone gasket that extends between the plate and a carbon steel wall frame which is welded to wall imbeds. The bioseal is provided on the non-operating end of the sterilizer, prevents passage of airborne microorganisms from the space between the vessel body and the structural wall opening. Steam is the primary source of pressure behind the door seal. All sterilizers with bioseals have air back-up to maintain seal pressure when out of cycle or if the steam source is not available.

Air-differential seal (double door units only), provided on the non-operating end of the sterilizer, minimizes airflow between the dirty and clean sides of the barrier.

Back cabinet panel is provided on single door, freestanding units where the unit is accessible on all sides.

Air detector (integral factory piping option) is used to determine whether any air or non-condensable gas present in the chamber is sufficient to impair the sterilizing process.

Seismic tie-down kit conforms to the California Code of Regulations.

Backflow preventer option can be installed on sterilizer piping to prevent the unwanted reverse flow of water or other substances into the potable water supply.

Power door provides automatic opening and closing by depressing a foot pedal. (Not available for sterilizers with Bio-Seal option).

Drain line reference probe automatically senses the drain line temperature during cycle operation. Individual cycles can be set to start the exposure phase according to chamber drain temperature, or according to load temperature. This option replaces the standard drain RTD probe with a dual element RTD probe, in the same sheathing.

0.2 micron bacterial retentive filter provides sterile air during airbreak at end of cycle.

Visible pressure gauges show chamber and jacket pressure on control panel.

Green Gravity Water Saver System provides additional water savings by collecting steam effluent and holding it in a cooling tank, reducing the amount of water required to cool the effluent.

Water ejector and closed loop chilled water system (drain only). Closed loop cooling source is used to cool the sterilizer effluent to <140°F (<60°C). This eliminates the need for water mixing with the effluent that is sent to drain. Plate heat exchanger is included. See equipment drawings for closed loop utility requirements.

Vacuum pump and closed loop chilled water system (drain only). Closed loop cooling source is used to cool vacuum pump seal water to <59°F (<15°C). This greatly reduces the amount of vacuum pump seal water that is sent to the drain. Plate heat exchanger and recirculation tank are included. See equipment drawings for closed loop utility requirements.

Vacuum pump and closed loop chilled water system (vacuum and drain). Closed loop cooling source is used to cool vacuum pump seal water to <59°F (<15°C) and sterilizer effluent to <140°F (<60°C). This greatly reduces the amount of vacuum pump seal water and eliminates the need for water mixing with the effluent that is sent to drain. Plate heat exchangers and recirculation tank are included. See equipment drawings for closed loop utility requirements.

Right hand piping. Piping is located on right side of sterilizer.

Reference recorder: An optional independent recorder is provided to record chamber drainline temperature and chamber pressure. The recorder is integrally mounted to the sterilizer fascia paneling.

Additional chamber penetration: One 1" NPT capped chamber penetration port is located at the side of the vessel so as not interfere with other piping. The port provides for up to twelve (12) owner provided thermocouple probes or other test instrumentation.

One port is provided as standard on Lab 250.

Printer on both ends. An additional printer is provided on the non-operating end of the sterilizer.

ACCESSORIES

One 1" threaded chamber penetration is optional on Lab 110; but standard on Lab 250.

Multiprobe sealing gland (for Lab 250 units only) permits insertion of temperature probes, such as thermocouples or resistance temperature detectors (RTD), into the chamber. The assembly includes a stainless steel threaded gland, seal, and seat to accept a maximum of 12 Customer-supplied probes.

Air Compressor, Portable, 115 Vac. This accessory is intended for pneumatic valves on sterilizers when an air utility is not provided by the facility. It may also be used for back-up pressure source for the door seal in bioseal applications.

This is a portable 1.5 Gallon compressor tank that delivers 59.5 LPM @ 345 KPa (1.7CFM @ 100 PSI). Refer to STERIS drawing no. 755718-038 for complete specifications.

AMSCO Stand Alone Water Conservation System recirculates and cools sterilizer process water to reduce water consumption. The system includes a collection tank, a heat exchanger with integral cooling fan, recirculation pump and temperature and pressure switches.

When the system is operating, sterilizer water effluent passes through a fan-cooled heat exchanger. The fan cools the water before it returns to the collection tank. Additional cooling water is added only when a maximum temperature set-point is reached. Refer to tech data sheet SD929 for more details.

PREVENTIVE MAINTENANCE

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

NOTES

1. The sterilizer is not supplied with a vacuum breaker or backflow preventer and, where required by local codes, installation of such a device in water line is not provided by STERIS.
2. Pipe sizes shown indicate terminal outlets only. Building service lines, not provided by STERIS, must supply the specified pressures and flow rates.
3. Disconnect switches (with OFF position lockout only; not provided by STERIS) should be installed in electric supply lines near the equipment.
4. Access to the recessing area from the control end of the sterilizer is recommended.
5. Clearances shown are minimal for installing and servicing the equipment.
6. If loading car and carriage are to be used with a Lab 250 sterilizer, front clearance should equal twice the length of the sterilizer. This will permit complete withdrawal of the loading car from the chamber and allow convenient maneuverability of the transfer assembly to and from the sterilizer.
7. Floor drain should be provided within confines of sterilizer framework.

UTILITY REQUIREMENTS

Refer to Equipment Drawing for complete information.

Sterilizer Using Facility Steam¹

Steam

1/2" NPT, 50 to 80 psig (344.7 to 551.6 kPa) dynamic, 97 to 100% vapor quality

Drain

1-1/2" ODT drain terminal. (Floor drain capacity must handle peak water consumption; refer to engineering data.)

Electrical - Controls

120 Volt, 50/60 Hz, 1-phase, 3.0 Amp

International:

230 Volt, 50/60 Hz, 1-Ph, 1.5 Amp

Sterilizer Feed Water

1.0" NPT, 30 to 50 psig (206.8 to 344.7 kPa) dynamic. Water is used for ejectors, vacuum pumps, exhaust condensers, and trap cooling. Refer to **Table 1** for recommended water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.

NOTE: Backflow prevention is not standard on the unit, but a backflow preventer option can be ordered.

Sterilizer Equipped With Integral Carbon Steel Steam Generator

Drain

1-1/2" ODT drain terminal. (Floor drain capacity must handle peak water consumption; refer to engineering data.)

Generator Drain

1/2" ODT

Electrical - Controls

120 Volt, 50/60 Hz, 1-phase, 9.5 Amp

International:

230 Volt, 50/60 Hz, 1-Ph, 1.5 Amp

Electrical - Generator

208 Volt, 50/60 Hz, 3-phase

240 Volt, 50/60 Hz, 3-phase

480 Volt, 50/60 Hz, 3-phase

600 Volt, 60 Hz, 3-phase

International:

380/415 Volt, 50/60 Hz, 3-Ph, (Prevacuum Units)

Sterilizer Feed Water

1.0" NPT, 30 to 50 psig (206.8 to 344.7 kPa) dynamic. Refer to **Table 1** for water specification guidelines.

Steam Generator Feed Water

1/2" NPT, 20 to 50 psig (137.9 to 344.7 kPa) dynamic. Refer to **Table 2** for required water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.

NOTE: Backflow prevention is not standard on the unit, but a backflow preventer option can be ordered.

Sterilizer Equipped With Integral Stainless-steel Steam Generator

Sterilizer Feed Water

1.0" NPT, 30 to 50 psig (206.8 to 344.7 kPa) dynamic. Refer to **Table 1** for required water quality.

Steam Generator Feed Water

1/2" NPT, 20 to 50 psig (137.9 to 344.7 kPa) Refer to **Table 3** for required water quality.

Drain

1-1/2" ODT generator drain terminal. (Floor drain capacity must handle peak water consumption; refer to engineering data).

Generator Drain

1/2" ODT

Electrical - Controls

120 Volt, 50/60 Hz, 1-phase, 9.5 Amp

International:

230 Volt, 50/60 Hz, 1-Ph, 1.5 Amp

Electrical - Generator

208 Volt, 50/60 Hz, 3-phase

240 Volt, 50/60 Hz, 3-phase

480 Volt, 50/60 Hz, 3-phase

600 Volt, 60 Hz, 3-phase

International:

380/415 Volt, 50/60 Hz, 3-Ph, (Prevacuum Units)

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.

1. External Supplied Steam (Facility Steam/Stand-Alone Steam Generator)

Table 1. Recommended Feed Water Quality for Sterilizers

Condition	Nominal Conditions	Maximum Conditions
Temperature	40°-60°F (4°-16°C)	70°F (21°C)
Total Hardness as CaCO ₃ *	50-120 mg/L	171 mg/L
Total Dissolved Solids	100-200 mg/L	500 mg/L
Total Alkalinity as CaCO ₃	70-120 mg/L	180 mg/L
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 mg/L	2.5 mg/L

* 17.1 mg/L = 1.0 grain hardness

Table 2. Required Feed Water Quality for Carbon-Steel Steam Generators

Condition	Nominal Conditions	Maximum Conditions
Temperature	40-140°F (4-60°C)	140°F (60°C)
Total Hardness as CaCO ₃ *	0-17 mg/L	130 mg/L
Total Dissolved Solids	50-150 mg/L	250 mg/L
Total Alkalinity as CaCO ₃	50-100 mg/L	180 mg/L
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 mg/L	2.5 mg/L
Resistivity †	2 - 6 kΩ·cm	26 kΩ·cm

* 17.1 mg/L = 1.0 grain hardness

† **WARNING-BURN HAZARD:** Never use supply water with resistivity exceeding 26 kΩ·cm, as doing so may cause malfunction of steam generator level control, resulting in sterilizer operator being severely burned by scalding water. If supply water resistivity exceeds 26 kΩ·cm immediately contact STERIS Service Engineering.

Table 3. Required Feed Water Quality Stainless Steel Generators

Type of Water	Deionized Water, Distilled or Reverse Osmosis
Temperature	≤ 140°F (≤ 60°C)
Minimum Specific Resistivity	1.0 MΩ·cm

NOTE: Do not connect tap water to stainless-steel steam generator. Use of water not meeting the required feed water quality will invalidate the warranty and is a violation of ASME Boiler Codes.

MODEL	CHAMBER SIZE in. (mm)	DIMENSIONS - inches (mm)							
		A ^a	B ^a	C	F	H ^a	J ^a	K ^a	L ^b
Lab 110	16 x 16 x 26 (406 x 406 x 660)	25 ^c (635)	30 (762)	35-3/4 (908)	26 (660)	25-1/2 (646)	18 (457)	40 (1016)	24-1/8 ± 1/4 (613 ± 6)
Lab 250	20 x 20 x 38 (508 x 508 x 965)	27 ^c (686)	32 (813)	45-1/8 (1146)	30 (762)	29-1/2 (747)	20 (508)	52 (1321)	28-1/8 ± 1/4 (714 ± 6)

^a Minimum Service Clearance

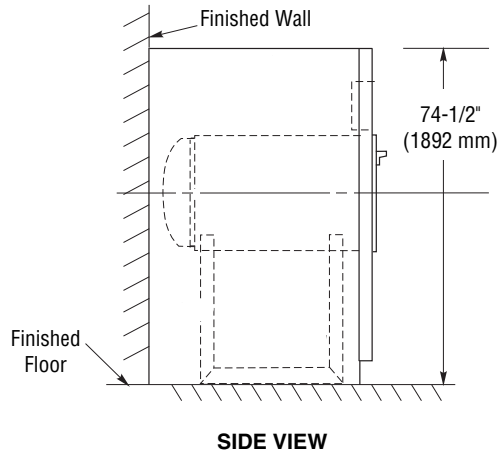
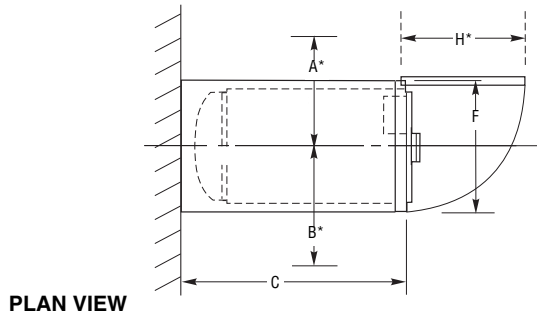
^b Wall Opening

^c If recessed through one wall and using facility steam: 18" (457 mm) for Lab 110; 20" (508 mm) for Lab 250.

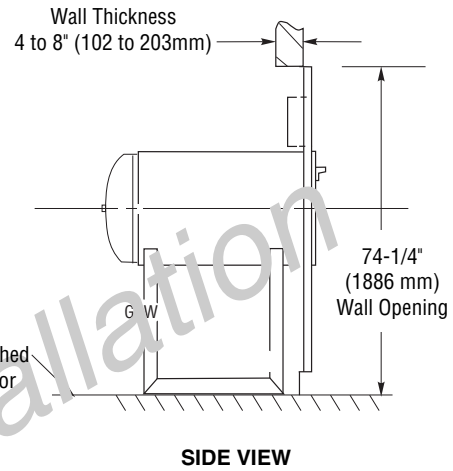
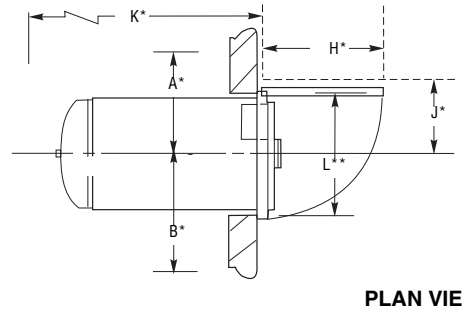
Life Sciences

Refer to the Following Equipment Drawings for Installation Details	
Equipment Drawing Number	Equipment Drawing Title
387352-612	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Single Door, Recessed, Electric Steam Heat
387352-613	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Single Door, Cabinet, Electric Steam Heat
387352-614	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Single Door, Recessed, Steam Heat
387352-615	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Single Door, Cabinet, Steam Heat
387352-616	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Double Door, Recessed Two Walls, Electric Steam Heat
387352-617	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Double Door, Recessed One Wall, Electric Steam Heat
387352-618	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Double Door, Recessed Two Walls, Steam Heat
387352-619	Lab 250 Series Sterilizer 20 x 20 x 38 (508 x 508 x 965) Vacumatic or Gravity, Double Door, Recessed One Wall, Steam Heat
387352-640	Lab 110 Series Sterilizer 16 x 16 x 26 (406 x 406 x 660) Vacumatic or Gravity, Single Door, Recessed, Steam Heat
387352-641	Lab 110 Series Sterilizer 16 x 16 x 26 (406 x 406 x 660) Vacumatic or Gravity, Single Door, Cabinet, Steam Heat
387352-642	Lab 110 Series Sterilizer 16 x 16 x 26 (406 x 406 x 660) Vacumatic or Gravity, Single Door, Recessed, Electric Steam Heat
387352-643	Lab 110 Series Sterilizer 16 x 16 x 26 (406 x 406 x 660) Vacumatic or Gravity, Single Door, Cabinet, Electric Steam Heat
387352-644	Lab 110 Series Sterilizer 16 x 16 x 26 (406 x 406 x 660) Vacumatic or Gravity, Double Door, Recessed One Wall, Steam Heat

Cabinet Enclosed

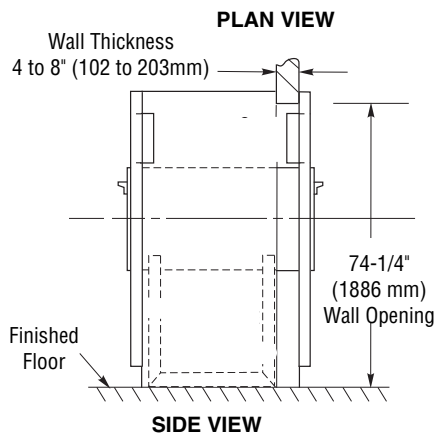
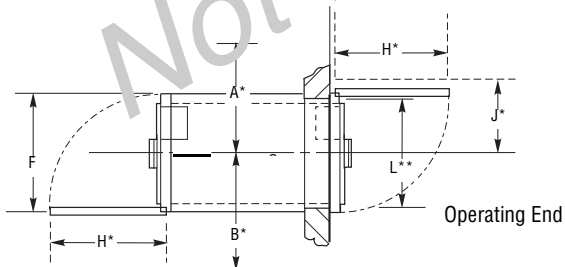


For Recessing

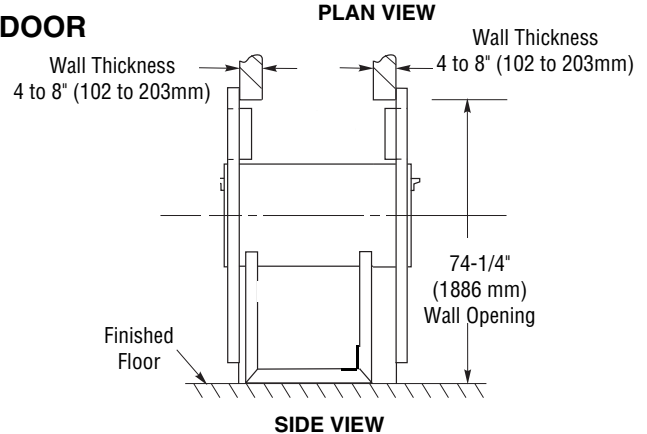
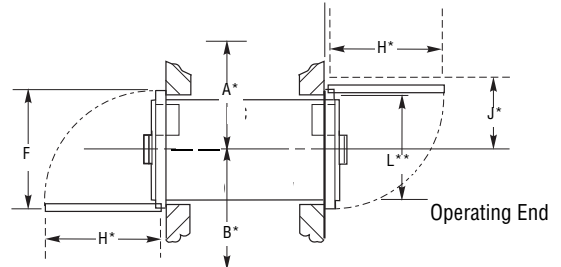


SINGLE DOOR

For Recessing Through One Wall



Recessing Through Two Walls (for Lab 250 Sterilizer only)



DOUBLE DOOR

ENGINEERING DATA

Model & Chamber Size in (mm)	Heating	MAXIMUM OPERATING WEIGHT ^a lbs (kg)		HEAT LOSS ^b BTU/hr at 70°F (21°C)						
				Single Door			Double Door			
		Single Door	Double Door	Cab't Enc	Recessed		Recessed One Wall		Recessed Two Walls	
				To Room	Front of Wall	Back of Wall	Front of Wall	Back of Wall	At Each End	Between Walls
Lab 110 16 x 16 x 26 (406 x 406 x 660)	Steam	750 (340)	989 (449)	4300	1600	2700	1600	3500	N/A	N/A
	Electric	890 (404)	N/A	6050	2300	3750	N/A	N/A	N/A	N/A
Lab 250 20 x 20 x 38 (508 x 508 x 965)	Steam	1231 (558)	1606 (728)	7000	2500	4500	2500	5300	2500	2800
	Electric	1371 (622)	1726 (782)	8750	3300	5450	3300	6250	3300	2950

Model & Chamber Size in (mm)	Heating	UTILITIES CONSUMPTION								
		Water ^c						Steam		
		Cold			Hot ^d					
		Peak gpm (lpm)	Per Cycle ^e gal/cycle (l/cycle)	Idle gph (lph)	Peak gpm (lpm)	Per Cycle ^e gal/cycle (l/cycle)	Idle gph (lph)	Peak ^f lb/hr (kg/hr)	Per Cycle ^e lb/cycle (kg/cycle)	Idle lb/hr (kg/h)
Lab 110 16 x 16 x 26 (406 x 406 x 660)	Steam	6 (23)	140 (530)	7 (27)	N/A	N/A	N/A	180 (81)	18 (8)	7 (3)
	Electric	6 (23)	140 (530)	7 (27)	1 (4)	3 (11)	1 (4)	N/A	N/A	N/A
Lab 250 20 x 20 x 38 (508 x 508 x 965)	Steam	6 (23)	140 (530)	10 (38)	N/A	N/A	N/A	180 (81)	21 (10)	7 (3)
	Electric	6 (23)	140 (530)	10 (38)	1 (4)	4 (15)	1 (4)	N/A	N/A	N/A

^a Based on chamber fully loaded with water flasks.

^b At 70°F (21°C).

^c Backflow preventer device in water line, when required by local codes, is not provided by STERIS.

^d Hot water recommended for units equipped with electric steam heat.

^e Per cycle values were based on a 270°F (132°C) Prevac cycle with 4 minute sterilize time and 20 minute dry time, and chamber fully loaded with 17 lb. (8 kg) instrument tray.

^f Peak steam demand (lbs/hr) may vary depending on operating conditions.

Additional utilities are required for units with the following options:

- Double Door Units w/Interlocks (Compressed Air)
- Liquid Air Cool (Compressed Air)
- Decontamination Cycle (Compressed Air)
- Bio-Seal (Optional Compressed Air Backup)
- Vacuum Pump (3-Phase Voltage)
- Stainless-Steel Piped Units (Treated Water)
- Indirect Steam Generator Units (Minimum 75 psig Steam Required)

Consult Customer service for specially configured equipment drawings.

For further information, contact:



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APPLICATION

The accessories discussed in this document are for loading/unloading 16 x 16 x 26" (406 x 406 x 660 mm), 20 x 20 x 38" (508 x 508 x 965 mm) sterilizers and for transferring goods to and from processing areas.

LOADING CAR AND TRANSFER CARRIAGE

Loading Car is a welded, corrosion-resistant framework with removable shelves constructed of corrosion-resistant welded sheet metal and wire.

Loading car includes:

- Corrosion-resistant metal tracks & cross brace frame
- Two shelves (Ref. WxLxH: 33 x 18-3/8 x 15/16")
- Ability to add a third adjustable upper shelf (adjustable to three heights, dimensions as above)

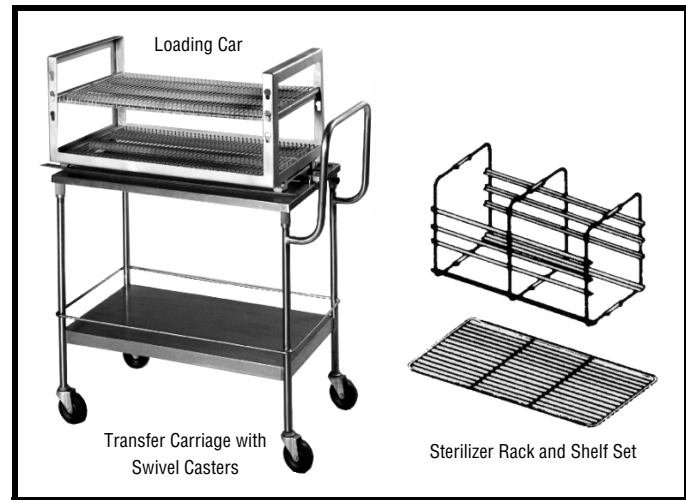
Carriage is constructed of welded stainless steel and is designed to support the loading car at an ergonomic height for loading and unloading the sterilizer.

Carriage includes:

- Height-adjustable loading car tracks (to align with tracks in sterilizer)
- Four swivel casters
- Neoprene wheels

The carriage is held to the sterilizer door frame by a hand-operated latch; and the loading car is secured to the carriage by a spring-loaded latch. Both latches are designed to enhance staff safety and are operated from the handle end of the carriage.

Note that AMSCO Century and Lab 250 sterilizers use an exclusive style transfer carriage that is incompatible with



(Typical – details may vary.)

Remanufactured AMSCO Eagle 3000 Series Sterilizers. Due to differences in door frame design, the style of transfer carriage used must match the type of sterilizer.

CHAMBER RACK AND SHELVES

Shelf Sets provide loading efficiency for a variety of mixed or single item loads. Shelves slide into set positions of the chamber rack. Shelf packages and additional shelves can be ordered as indicated on page 2. Note that shelves are removable to facilitate easier chamber cleaning.

Rack is constructed of corrosion-resistant metal and can include either two or three full-length shelves supported by angle guides. Racks are provided with stops which allow each shelf to be withdrawn approximately halfway without tipping under load weight. Each shelf is suitably reinforced and designed to allow free passage of sterilant.

Selections Checked Below Apply to this Equipment

STERILIZER

- ☐ Century Series ☒ Lab 250/110 Series
☐ Remanufactured Eagle 3000

DOOR CONFIGURATION

- ☐ Single Door ☒ Double Door

CHAMBER SIZE

- ☐ 16 x 16 x 26" – 29 gal. (110 Liter)
(406 x 406 x 660mm)
☒ 20 x 20 x 38" – 66 gal. (250 Liter)
(508 x 508 x 965 mm)

SHELVES & LOADING ACCESSORIES¹

- ☒ Rack and Two Shelves^{2, 3}
(1 Bottom Shelf & 1 Intermediate Shelf)
☐ 20 x 20 x 38" Single Door (FV02-100-5)
☒ 20 x 20 x 38" Double Door (FV02-200-5)
☐ Spare Shelf:
☐ 16 x 16 x 26" Sterilizers (FV01-000-6)
☐ 20 x 20 x 38" Sterilizers (FV02-000-6)

SHELVES & LOADING ACCESSORIES (CONT.)¹

- ☐ Loading Car - 20 x 20 x 38 (FV02-000-1)
☐ Transfer Carriage - 20 x 20 x 38 (FV02-000-2)
☐ Chamber Track Assembly
☐ 20 x 20 x 38" Single Door (FV02-100-3)
☐ 20 x 20 x 38" Double Door (FV02-200-3)
☐ Loading Car, Transfer Carriage and Track Assembly
☐ 20 x 20 x 38" Single Door (FV02-100-4)
☐ 20 x 20 x 38" Double Door (FV02-200-4)

The Following Apply to Remanufactured Eagle 3000 Sterilizers Only

- ☐ Bottom Shelf & Support³
☐ 16 x 16 x 26" Sterilizers (AX00-506-300)
☐ 20 x 20 x 38" Sterilizers (AX00-606-300)
☐ Rack & 2 Shelves³
☐ 16 x 16 x 26" Sterilizers (AX00-547-300)
☐ 20 x 20 x 38" Sterilizers (AX00-647-300)

The Following Apply to Remanufactured Eagle 3000 Sterilizers Only (Continued)

- ☐ Rack & 3 Shelves³
☐ 16 x 16 x 26" Sterilizers (AX00-548-300)
☐ 20 x 20 x 38" Sterilizers (AX00-648-300)
☐ Chamber Track Assembly (for 20 x 20 x 38") (AX00-644-300)
☐ Loading Car, Carriage and Chamber Track Assembly (for 20 x 20 x 38"), (AX00-603-306-4)

Notes:

1. Does not apply to Remanufactured Eagle 3000 Sterilizers.
2. Century, C, & Lab 16 x 16 x 26" sterilizers ship with loading rack, 1 bottom shelf and 1 intermediate shelf.
3. See page 2 for shelf dimensions and options.

Item _____

Location(s) _____

AMSCO Small Century, AMSCO C, Lab 110 and Lab 250 Sterilizers

Unit	Reference Shelf Dimensions	
	Intermediate	Bottom
16"	25-9/16 x 14-7/16 x 5/8"	25-9/16 x 12-7/32 x 5/8"
20"	33-9/16 x 18-5/8 x 7/8"	33-9/16 x 16-5/6 x 7/8"

16" and Lab 110 Sterilizers

Each ships with a loading rack and the following 2 shelves:

- 1 Intermediate shelf
- 1 bottom self

Optional: Spare Shelf (Intermediate) (Part no. FV01-000-6)

20" and Lab 250 Sterilizers

Each ships with items that have been ordered. Shelving choices:

(FV02-100-5) Includes Single Door Loading rack and 2 shelves as follows:

- 1 Intermediate shelf
- 1 bottom shelf

(FV02-200-5) Includes Double Door Loading rack and 2 shelves as follows:

- 1 Intermediate shelf
- 1 bottom shelf

Optional: Spare Shelf (Intermediate) (Part no. FV02-000-6)

AMSCO Remanufactured Eagle 3000 Sterilizers

Eagle 3000 Remanufactured Sterilizers include frame, supports and cross braces consisting of corrosion-resistant wire rod. Supports keep rack off chamber floor. Each unit ships with the items ordered.

Shelving Choices for Remanufactured Eagle 3000 Sterilizers:

– Bottom Shelf & Support

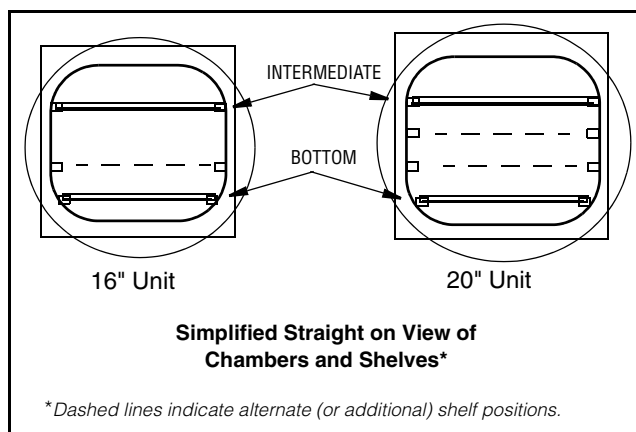
- 16 x 16 x 26" Sterilizers (AX00-506-300)
- 20 x 20 x 38" Sterilizers (AX00-606-300)

– Rack & 2 shelves (1 Intermediate and 1 Bottom Shelf)

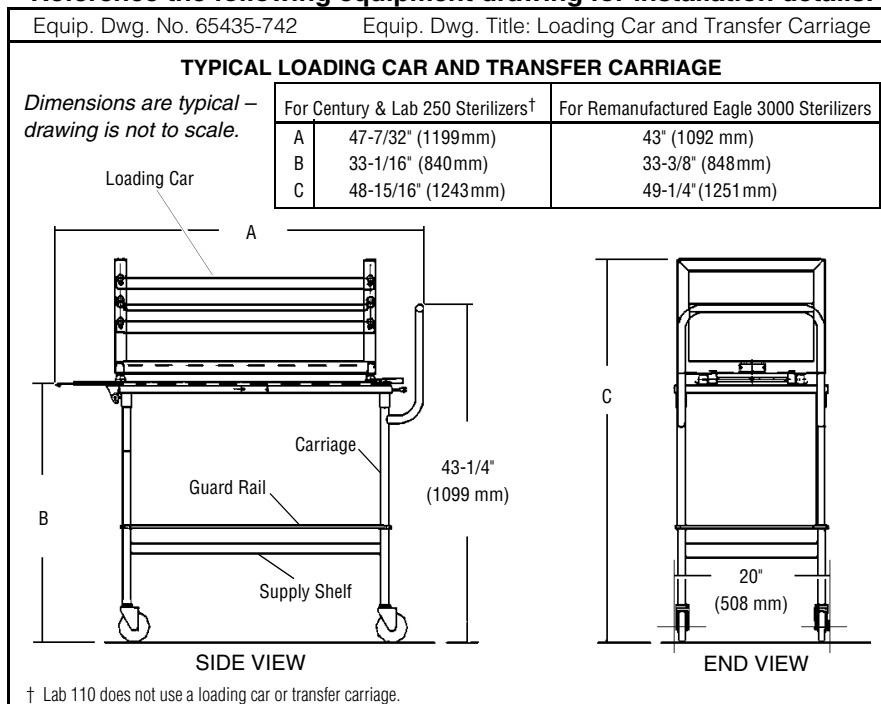
- 16 x 16 x 26" Sterilizers (AX00-547-300)
- 20 x 20 x 38" Sterilizers (AX00-647-300)

– Rack & 3 Shelves (2 Intermediate and 1 Bottom Shelf)

- 16 x 16 x 26" Sterilizers (AX00-548-300)
- 20 x 20 x 38" Sterilizers (AX00-648-300)



Reference the following equipment drawing for installation details.

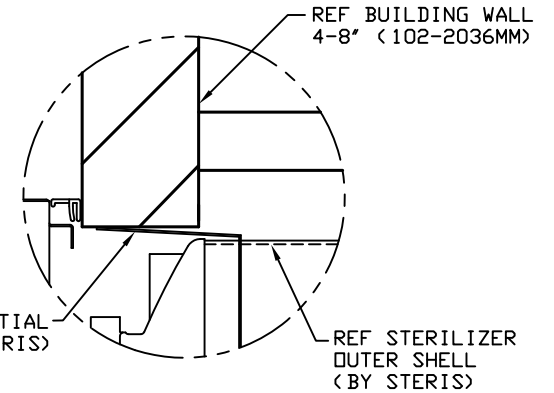
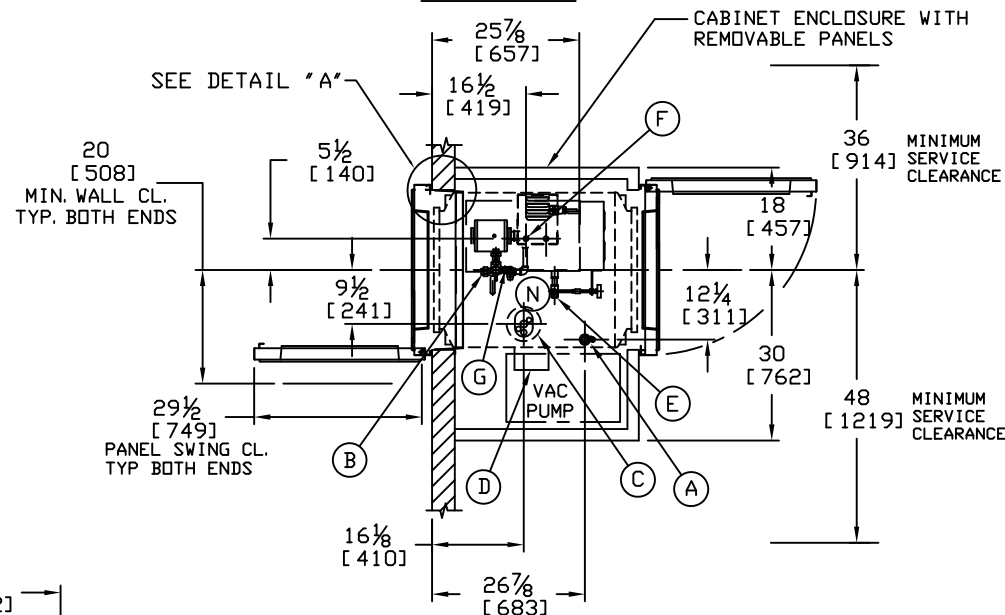


For further information, please contact:

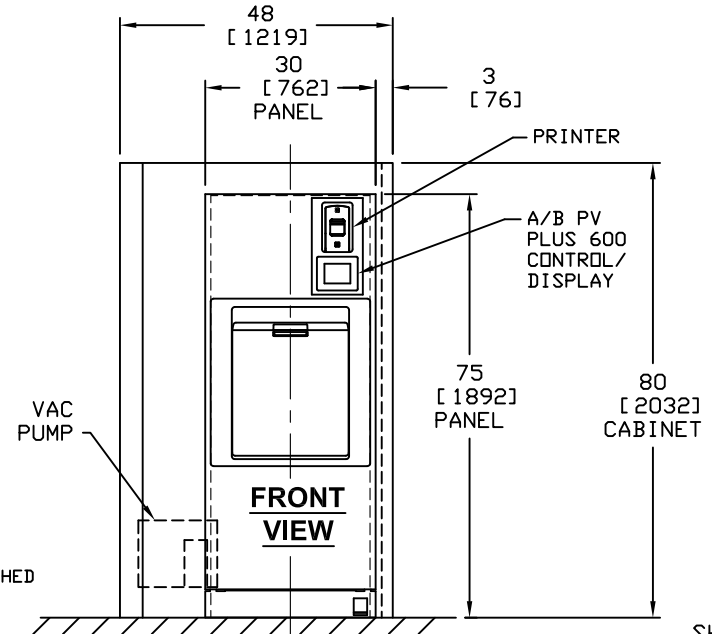
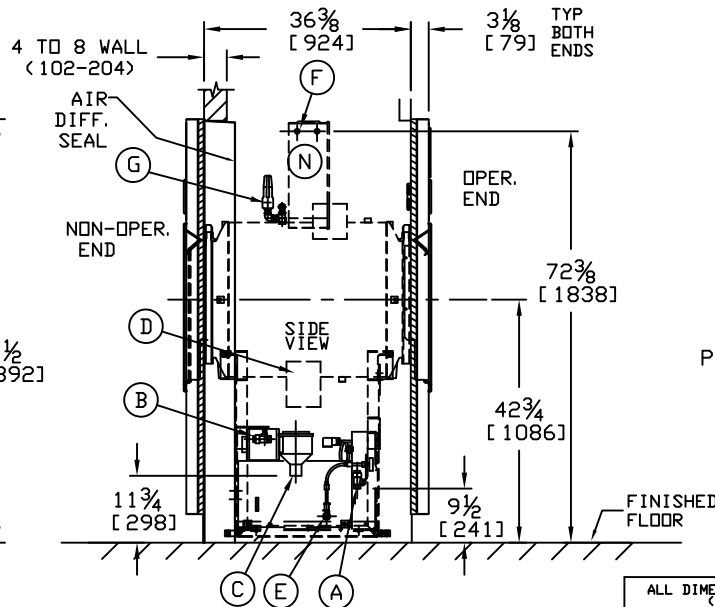
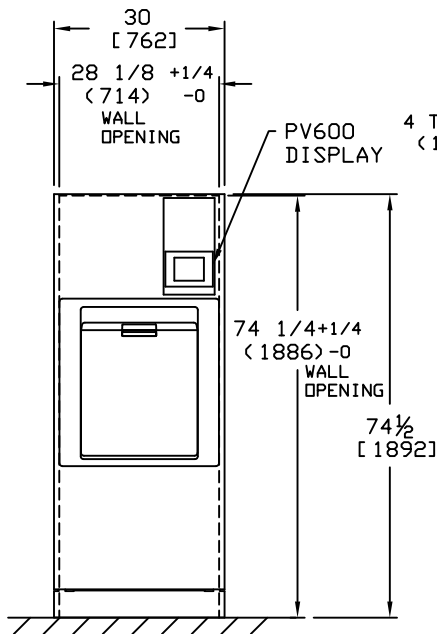
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PLAN VIEW



DETAIL A



SHT. 1 OF 3

*TO CENTERLINE OF 7/8 KNOCKOUT ON CONTROL BOX.

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)

ALSO REFER TO GENERAL NOTES APPLICABLE TO EQUIPMENT DRAWINGS

DWG. NO. 62941-091

STERIS

STERIS Corporation
Mentor, OH

LAB 250 SERIES STERILIZER
20x20x38 (508x508x965)
VAC, DBL DOOR, REC 1 WALL,
W/AIR DIFF SEAL (NOE)
ELEC STM HEAT, COMP AIR
VAC PUMP, BACKFLOW PREVENTER

EQUIPMENT DRAWING NO.
387362-524

ITEM _____
LOCATION(S) _____

Lab 250 Plumbing Utility Requirements (Elec Stm Generator w/ Vac Pump)			
Code	Utility	Parameter	Requirement
A	Cold Water (common properties)	Connection Size / Type	1" NPT
		Water Quality	See Feed Water Quality Table
		Temperature Range	40° - 70°F / 10°C - 21°C
	Cold Water (Vacuum Pump)	Dynamic Pressure	20-50 (psig) / 137.9 - 344.7 (kPa)
		In Cycle Consumption*	48 Gal / 91 Lit (per cycle)
		Out of Cycle Consumption	10 Gal / 7.5 Lit (per hour)
		Peak Capacity (in cycle)	3 Gal / 11 Lit (per minute)
B	Hot Water (Steam Gen)	Connection Size / Type	1/2" NPT
		Water Quality	See Feed Water Quality Table
		Dynamic Pressure	20-50 (psig) / 137.9 - 344.7 (kPa)
		In Cycle Consumption*	4 Gal / cycle
		Out of Cycle Consumption	1 Gal / 3.8 Lit (per hour)
		Peak Capacity (in cycle)	1 Gal / 3.8 Lit (per minute)
C	Drain / Floor Sink	Connection Size / Type	1 1/2" ODT
		Operation Flow Rate	6 Gal / 22.7 Lit (per minute)
		Floor Sink	12 x 12 in (305x305mm) Min Size
E	Drain - Steam Gen	Connection Size / Type	1/2" ODT
G	Safety Relief Valve	Connection Size / Type	3/4" NPT
		Pressure	50 psig
		Capacity	374 lbs/hr
N	Compressed Air	Connection Size / Type	1/2" NPT, dehumidified, oil free
		Pressure	80 to 125 psig
		Capacity	2 CFM
* Water usage based on 30 minutes exposure and 5 minute dry @121°C. Actual consumption may increase depending on load volume.			

Electrical Requirements: Sterilizer with Steam Generator and/or Vacuum Pump				
Code	Description	Voltage	Hz	Amps / phase
F	Control Box	120, 1 Ph	50/60	9.5
D	Electric Service Steam Generator & Vacuum Pump	208, 3 Ph	50/60	89.2
		240, 3 Ph	50/60	78.4
		380/415, 3 Ph	50/60	42/46
		440/480, 3 Ph	50/60	34/40
		575/600, 3 Ph	50/60	31/32

Lab 250			
GENERAL SPECIFICATIONS TABLE - Double Door / Electric Steam			
Physical Specifications			
Shipping Dimensions (North America)	W x H x L	38 x 81 x 53 in	1615 lbs / 733 kg
		965 x 2057 x 1346 mm	
Shipping Dimensions (International)		40 x 84 x 53 in	1975 lbs / 896 kg
		1016 x 2134 x 1346 mm	
Operating Information	W x H x L	30 x 74 1/2 x 45 1/8 in	1525 lbs / 692 kg
		762 x 1891 x 1146 mm	
	Full Load		1726 lbs / 782 kg
Full load based on chamber fully loaded with water flasks.			

Lab 250 Heat Source	Heat Loss BTU/HR @ 71°F (21°C)						
	Single Door			Double Door			
	Cabinet	Recessed		Recessed One Wall		Recessed Two Walls	
	To Room	Front of Wall	Back of Wall	Front of Wall	Back of Wall	At each End	Btwn Walls
Bldg Steam	7000	2500	4500	2500	5300	2500	2800
Electric Gen.	8750	3300	5450	3300	6250	3300	2950

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LAB 250 SERIES STERILIZER
20x20x38 (508x508x965)
VAC, DBL DOOR, REC 1 WALL,
W/AIR DIFF SEAL (NOE)
ELEC STM HEAT, COMP AIR
VAC PUMP, BACKFLOW PREVENTER

EQUIPMENT DRAWING NO.
387362-524
ITEM _____
LOCATION(S) _____

Recommended Cold Water Feed for Sterilizers

Condition	Nominal Conditions	Maximum Conditions
Temperature	40° - 60°F (4° - 16°C)	70°F (21°C)
Total Hardness as CaCO ₃	50 - 120 mg / L	171 mg / L
Total Dissolved Solids	100 - 200 mg / L	500 mg / L
Total Alkalinity as CaCO ₃	70 - 120 mg / L	180 mg / L
pH Level	6.8 - 7.5	6.5 - 8.5
Total Silica	0.1 - 1.0 mg / L	2.5 mg / L
17.1 mg / L = 1 Grain Hardness		

Recommended Hot Water Feed for Carbon Steel Steam Generators

Condition	Nominal Conditions	Maximum Conditions
Temperature	70° - 140°F (21° - 60°C)	150°F (66°C)
Total Hardness as CaCO ₃	0 - 17 mg / L	130 mg / L
Total Dissolved Solids	50 - 150 mg / L	250 mg / L
Total Alkalinity as CaCO ₃	50 - 150 mg / L	180 mg / L
pH Level	6.8 - 7.5	6.5 - 8.5
Total Silica	0.1 - 1.0 mg / L	2.5 mg / L
Resistivity	2000-6000	26,000
17.1 mg / L = 1 Grain Hardness		

NOTES:

- For general installation information, see STERIS drawing No. 62941-091 (This drawing should always accompany the equipment drawings.) If drawing # 62941-091 is not attached, contact STERIS Service Engineering at 1-800-999-4004 to obtain a copy.
- If loading car and transfer carriage are to be used, front clearance should equal twice the length of the sterilizer. Floors should be level in front of the sterilizer door.
- Leveling feet are provided for proper installation.
- The seismic anchorage of this sterilizer has been pre-approved in California. Contact Service Engineering at 1-800-333-8848 to obtain a copy of the latest seismic anchorage report.
- For seismic installations, a seismic add-on kit (Ref P10050030) must be installed on the sterilizer.
- STERIS assumes no responsibility for changes made necessary through failure to observe these specifications on equipment drawing and note pages. Specifications and descriptions are subject to change without notice.
- Utility connections should be within 6 feet of sterilizer for installation. Shut off valves should be visible and accessible.
- Safety relief valve is piped to within a foot of the floor as standard. Code G is the location of the safety relief valve . 3/4" NPT, 374 lb/hr, Set Point is 50 psig. If building code requires piping to atmosphere, piping is by others.

SHT. 3 OF 3

ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS)
ALSO REFER TO GENERAL NOTES
APPLICABLE TO EQUIPMENT DRAWINGS
DWG. NO. 62941-091



STERIS Corporation
Mentor, OH

LAB 250 SERIES STERILIZER
20x20x38 (508x508x965)
VAC, DBL DOOR, REC 1 WALL,
W/AIR DIFF SEAL (NOE)
ELEC STM HEAT, COMP AIR
VAC PUMP, BACKFLOW PREVENTER

EQUIPMENT DRAWING NO.
387362-524

ITEM _____
LOCATION(S) _____

INTRODUCTION

Each equipment drawing (enclosed) pertains to the sterilizing equipment as specified or purchased by you. These general notes and recommendations are intended to complement the equipment drawing(s) and thereby further assist you in achieving satisfactory installation of the equipment. The information on this and the enclosed drawing(s) is based upon the design and construction of the equipment as of the date of the drawing.

SPACE CONSIDERATIONS

Clearances

The clearance dimensions shown on each drawing are the minimum considered necessary to allow space for servicing and operating the equipment.

Clearance in front of sterilizer, for comfortable loading and unloading operations, should equal about twice the inside length of the sterilizer chamber unless otherwise specified on Equipment Drawing.

Dimensions

Attention must be given to all *printed dimensions* shown on each drawing, since no attempt has been made to hold these drawings to any specific scale.

MOUNTING DETAILS

Wall Thickness – Recessed Sterilizer

STERIS must be advised of the total finished thickness of the wall or walls through which the sterilizer will extend.

Wall Thickness – Amsco® Modular Wall

If the drawing pertains to an **Amsco Modular Wall**, STERIS must be advised of the overall width and height of the wall opening that the modular wall is to cover.

Recessing Cubicle

- **Ventilation** – It is recommended that a louvered, grilled opening be provided in the curtain wall above the sterilizer(s) to dispel excess vapor by negative pressure behind the wall. If **Amsco Modular Wall** has been specified, this opening will not be required.
The recessing cubicle should be adequately ventilated to maintain maximum temperature in the range of 80° to 90°F (27° to 32°C) when the equipment is in operation. 10% to 90% Relative Humidity – non-condensing
- **Access** – Access to recessed service area from control end of the sterilizer is recommended.
- **Illumination** – Illumination designed to afford 50 to 100 footcandles of total illumination, evenly distributed in principal areas of the recessing cubicle, should be provided.
- **Service Power Requirement** – One convenience outlet (110-120 Volts) is required for power tools.

- **Drainage** – A floor drain or floor sink is recommended for each cubicle and should be provided within confines of sterilizer framework.

Space Between Recessed Sterilizers

For a multiple (composite) sterilizer installation through a constructed wall (not Amsco Modular Wall), a minimum of 10" (254 mm) clearance between the front panels is recommended.

Cabinet-enclosed Sterilizer

Cabinet-enclosed units should be located in a well-ventilated room from which heat and steam vapors may be dispelled rapidly. A separate floor drain is recommended for each cabinet-enclosed sterilizer, to be located within the confines of the sterilizer framework.

UTILITY SERVICE REQUIREMENTS

Roughing-in

All lines should be short-stubbed through the floor, wall or ceiling, far enough to permit coupling with stop valves. Provisions must be made for short-swing connections to equipment terminals. Piping outlets (stubbing) for multiple units (composite installations) should be combined in one common set, usually at rear of the equipment.

It is recommended that pipes and conduit *not* be stubbed through the floor under the chamber of a recessed sterilizer. This recommendation would not preclude the stubbing of pipes and conduit through the floor within the confines of the *panels* on a cabinet-enclosed sterilizer.

Terminal Fittings

Unless otherwise specified in the contract or purchase order, piping and other appurtenances between terminal fittings on the equipment and wall or floor outlets (stubbing) are not furnished by STERIS.

Pipe Sizes

Pipe sizes listed on equipment drawing indicate the equipment termination sizes only. Size of supply piping is dependent on length of pipe run from pressure regulating station for steam line and main water headers, to ensure adequate supply service pressure and demand flow at equipment terminals. Effect of coincident draw of multiple unit installations must also be considered.

Pressure Relief Valves

Any piping installed to a pressure vessel relief valve must not reduce the discharge capacity of the relief valve. Plumbing must be such that removal of sterilizer parts, including relief valve, does not require unsoldering or cutting of new piping. Recommended piping practices for relief valve piping can be found in ASME Boiler and Pressure Vessel Code (Section VIII, Para. UG-135).

Backflow Preventer

If local codes require a reduced pressure principle device on water supply line, it shall be provided by others.

Blow Down Valve

Recommend provisions of blow down valve at each facility steam and water strainer to enable strainer clean out.

Blow down building steam and water supply lines before final connection to equipment.

Shutoff Valves

Provide piping shutoff valve, pipe plugged tee and union in steam and water supply connections between each piece of equipment and stub outs, so that the unit can be serviced without interruptions of supply to other equipment. Plugged tee can be used later for test pressure gauge connection. Arrange connection piping to allow access to machine components and electrical control panel.

Steam and Water Pressures

Steam and water pressures indicated on each drawing are to be dynamic at the sterilizer.

Steam should be condensate free and between 97 and 100% saturated vapor to ensure proper goods drying.

Sterilizer is adequately equipped to operate on the pressures listed in the equipment drawing. If supply line pressure exceeds those shown, provide reducing valves. These are not furnished by STERIS unless specifically called for in the contract or purchase order.

Water Quality

- **Water Supply to Sterilizer** – Water is used for ejectors, heat exchangers and trap cooling. Refer to Table 1 for recommended water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.
- **Carbon Steel Steam Generator Feed Water** – Refer to Table 2 for required water quality. Use of feed water within the nominal conditions will optimize equipment performance and reduce maintenance.
- **Stainless Steel Steam Generator Feed Water** – Requires deionized, distilled or reverse osmosis water with minimum resistivity of 1 MΩ·cm.

NOTES:

1. Do not connect tap water to stainless steel generator. Use of water not meeting the required feed water quality will invalidate the warranty, and is a violation of ASME boiler codes.
2. Failure to provide correct utility pressure and steam quality will result in reduced equipment performance which may affect overall equipment performance.

Table 1. Recommended Feed Water Quality for Sterilizers

Condition	Nominal Conditions	Maximum Conditions
Temperature	40°-60°F (4°-16°C)	70°F (21°C)
Total Hardness as CaCO ₃ ^a	50-120 ppm	171 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCO ₃	70-120 ppm	180 ppm
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 ppm	2.5 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

a. 17.1 ppm = 1.0 grain hardness

Table 2. Required Feed Water Quality for Carbon-Steel Steam Generators

Condition	Nominal Conditions	Maximum Conditions
Temperature	40-140°F (4-60°C)	150°F (66°C)
Total Hardness as CaCO ₃ ^a	0-17 ppm	130 ppm
Total Dissolved Solids	50-150 ppm	250 ppm
Total Alkalinity as CaCO ₃	50-100 ppm	180 ppm
pH	6.8-7.5	6.5-8.5
Total Silica	0.1 - 1.0 ppm	2.5 ppm
Resistivity - Ω·cm ^b	2000-6000	26000
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

a. 17.1 ppm = 1.0 grain hardness

b. **WARNING – BURN HAZARD:** Sterilizer operator may be severely burned by scalding water if the water level control malfunctions. The steam generator level control may malfunction if the supply water exceeds 26,000 Ω·cm (38.5 micro-ohms conductivity min.). Do not connect to treated water (e.g., distilled, reverse osmosis, deionized) unless water resistivity is determined to be acceptable. If water exceeds 26,000 Ω·cm, contact STERIS Service Engineering for information concerning modifications required to the generator control system.

Venting Sterilizer To Atmosphere

If sterilizer has an atmospheric vent fitting (in lieu of a condenser), it should be connected to a vertical, unrestricted atmospheric vent stack. When more than one sterilizer is connected to a single vent stack, a self-draining header may be used. At no time should any riser from the sterilizer exhaust terminal to the header or vent stack be less than 45° to the horizontal. If more than one sterilizer is connected by header to riser, header is to drain toward sterilizer at 45° angle. Header and riser are to increase in size accordingly.

Wiring Terminals

Wiring on the equipment terminates at a junction box or boxes as shown on each drawing. Wiring and other appurtenances between junction box (or boxes) and building service lines are not furnished by STERIS.

Disconnect Switches

Each piece of equipment must have a dedicated disconnect switch to allow servicing. Disconnect switches with off position lockout only must be furnished and installed by the Customer in electric supply lines near the equipment.

Steam Return Lines

Steam return lines from the sterilizer jacket should be connected to a gravity system piped to a vented receiver. Avoid any piping arrangement that could cause back pressure in the return line. (This would not apply if steam return lines were specified to be piped into the sterilizer condenser system or waste line.) Pressurized steam condensate return lines can cause reduced equipment performance.

Motors

In providing electric service for motors, conductors should be sized to conform to the National Electrical Code specifications for rated motor current and motor branch circuit capacity, adjusted for ambient temperature conditions (for 3/4 HP and over) and voltage drop.

Drains

Equipment drains must be properly sized to handle peak water usage. Sterilizer funnels supplied by STERIS have an integrated, internal air gap.

Table 3. Recommended Cold Feed Water Quality for Washers (Ref., AAMI TIR 34)

Condition	Nominal conditions	Maximum Conditions
Temperature	40 - 60°F (4° - 16°C)	70°F (16°C)
Total Dissolved Hardness as CaCo3	50 - 80 ppm	120 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCo3	70 -120 ppm	180 ppm
pH	6.8 - 7.0	7.5
Total Silica	0.1 - 0.5 ppm	1.0 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

Table 4. Recommended Hot Feed Water Quality for Washers (Ref., AAMI TIR 34)

Conditions	Nominal Conditions	Maximum Conditions
Temperature	110°F (43°C)	150°F (66°C)
Total Dissolved Hardness as CaCo3	50 - 80 ppm	120 ppm
Total Dissolved Solids	100-200 ppm	500 ppm
Total Alkalinity as CaCo3	70 -120 ppm	180 ppm
pH	6.8 - 7.0	7.5
Total Silica	0.1 - 0.5 ppm	1.0 ppm
Chlorides	1.0 – 8.0 ppm	10.0 ppm
Cu	0.0 – 0.08 ppm	0.1 ppm
Fe	0.0 – 0.08 ppm	0.1 ppm
Zn	0.0 – 0.08 ppm	0.1 ppm
Al	0.0 – 0.08 ppm	0.1 ppm
Mg	0.0 – 0.08 ppm	0.1 ppm

Table 5. Recommended Pure Water Feed Water Quality for Washers (Ref., AAMI TIR 34)

Conditions	Nominal Conditions	Maximum Conditions
Temperature	60°F (16°C)	140°F (60°C)
pH	7.0	6.8 - 7.5
Resistivity – MΩ-cm	0.5 MΩ-cm	0.1 MΩ-cm

Table 6. Recommended Clean Dry Compressed Air Quality for Washers (Ref., ISO 8573-1 Class 5)

Condition	Nominal Conditions	Maximum Conditions
Maximum Particle Size	20 Micron	40 Micron
Particulate Density	5.0 ppm	8.3 ppm
Dew Point	37°F (3°C)	45°F (7°C)
Oil Concentration	10 mg/cubic-m	25 mg/cubic-m
Air Pressure	80 -100 PSIG Dynamic	125 PSIG Dynamic

Water Quality Supplied to Washer

- **Cold Water Supply to Washer** – Cold water is used for pre-wash, chamber steam vapor condensing, and for cooling hot water or steam condensate going to the drain. Use of feed water quality within the nominal conditions will improve pre-wash of instruments or utensils, optimize equipment performance, and reduce maintenance.
- **Hot Water Supply to Washer** – Hot water is used for wash phase and rinse phase. Use of feed water quality within the nominal conditions will improve detergent performance, reduce chamber scale build-up, optimize equipment performance, and reduce maintenance.
- **Pure Water Supply to Washer** – Pure water is used during the final rinse phase. Use of feed water quality within the nominal conditions will reduce spotting on instruments, reduce chamber scale build-up, optimize equipment performance, and reduce maintenance.

Compressed Air Supplied to Washer

Compressed air is used for operating pneumatically controlled water or steam valves, operating opening and closing of doors, and operating conveyor mechanisms. Use of compressed air quality within the nominal conditions will provide optimal pneumatic device performance, prevent internal pneumatic device corrosion, and reduce maintenance.

Steam Condensate Return from Washer

Steam condensate is the by product from heating water and from drying circulated air within the washer. The steam heating process is done through means of heat exchanger coils whereby the steam supply does not make direct contact with the media processed within the washer. The steam condensate from the process will be of equivalent water quality in the facility steam boiler whereby it may be recycled. If the steam condensate is not to be recycled, it may be directed to the floor

drain through use of optional steam condensate cool down equipment modification packages. For best washer heating and drying

For best washer heating and drying performance, it is required to direct the steam condensate return to a non-pressurized vented enclosure* to prevent back pressure against the incoming steam supply to the washer. Steam condensate return piping vertical rises in excess of 17 feet can also create excess back pressure which can hinder the heating process.

NOTE: *Typical vented condensate return enclosures or sumps have internal float mechanisms that activate a water pump to return the condensate to the facility boiler.*

IMPORTANT

STERIS assumes no responsibility for changes made necessary through failure to explicitly observe these instructions and recommendations. In all instances, local, county, state, and national regulations should be observed.

For Further Information, contact:

STERIS®



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STERIS SHIPPING INSTRUCTIONS AND SERVICE REQUIREMENTS

PREPARATION FOR SHIPMENT

Each unit of equipment shall be placed in a substantial shipping container or crate complying with applicable rules of the I.C.C. Uniform Freight Classification to ensure acceptance by the common or other carrier for safe transportation to final destination at the lowest rate. The shipping crate or container for heavy equipment (such as sterilizers and water stills) shall be of skid construction to facilitate handling by lift equipment.

The exterior of each container shall be clearly and legibly marked with the room, floor and item number (if available), shipping address, and brief description of the contents. A packing list and complete instructions for uncrating the equipment and setting it in place shall be fastened to the outside of the container or crate; such information shall be protected by a waterproof envelope. Packaging, packing, and marking differing from that above shall be provided, if specified.

INSTALLATION INSTRUCTIONS

Unless additional copies are specified, one set of complete installation instructions, including prints showing all utility service requirements, space requirements and wiring diagrams (if not affixed to the equipment) shall be furnished with each unit of equipment.

OPERATING AND MAINTENANCE INSTRUCTIONS

Instructions for operating and performing periodic preventive maintenance on each unit of equipment, including a list of the service parts and quantity of each required for this purpose, shall be furnished. Unless otherwise specified, one copy of this material shall be furnished.

SERVICE AFTER INSTALLATION*

After installation of each assembly, STERIS shall provide a factory-trained technician to perform repair service as required by the customer. This service shall be on a time and material basis unless the equipment is still within the manufacturer's warranty.

If specified, STERIS shall provide a factory-trained technician to perform preventive maintenance services on each assembly following its test and demonstration.

* *These services are available from the STERIS Corporation within the continental United States, Alaska, and Hawaii.*

NOTICE: As used in this specification, the terms "if specified", "is specified", "as specified", "when specified", and "unless otherwise specified" are understood to mean that the article, type of article, arrangement, component, material or finish to which any of these terms may relate in the specification will be neither quoted nor furnished by the STERIS Corporation except at the customer's option as stated by him on invitations for bids, requests for price quotations, requests for proposals, contracts, purchase orders or sales orders. STERIS assumes no obligation to supply any of the said affected types, articles, arrangements, components, finishes or materials solely because they are described in this publication.

For further information, please contact:



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