STERIS®

AMSCO® CENTURY® SCIENTIFIC SMALL STERILIZERS

APPLICATION

Amsco Century Scientific Sterilizers are available in three configurations for sterilization of certain materials used in laboratory and industrial applications:

- **Gravity:** Designed for sterilization of nonporous heat- and moisture-stable goods, sterilization of liquids and media in borosilicate glass containers with vented closures, and decontamination of supplies after laboratory procedures. 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 a gravity sterilizer. Prevacuum sterilizer is equipped with prevacuum, gravity, liquid, leak test, and daily air removal test cycles.
- **Isothermal:** Designed for low temperature sterilization of heat-sensitive and heat-coagulable materials in addition to the same sterilization capabilities as a gravity sterilizer. Isothermal sterilizer is equipped with isothermal, gravity, and liquid cycles.

Each configuration includes choice of a single or double door, for open or recessed mounting.*

** Recessed two wall mounting not available for 16 x 16 x 26" (406 x 406 x 660 mm) double door sterilizers.*

DESCRIPTION

Amsco Century Scientific Sterilizers are the next advancement in the STERIS line of steam-jacketed sterilizers. Century Series sterilizers are equipped with the latest features in both state-of-the-art technology and ease of use.

Primary Product Features

Century control system with enhanced functionality and user-friendly color interface screen.

- Touch-sensitive screen with 30-line x 40-character display area
- Display features a wide viewing angle and high-visibility backlighting
- Ink-on-paper impact printer
- Help screens for programming and troubleshooting alarm conditions
- Standard communication interface with most PC compatible peripheral devices (e.g., disk drives, printers)
- Automatic check of control program and cycle data maintains process integrity
- Service reprogrammable flash ROM memory

Vertical sliding door with hands-free loading and unloading capability.

- Foot pedal activated door opening and closing
- Non-lubricated, steam activated door seal

(Typical only - some details may vary.)

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 significantly reduces the probability of media plugging drain line

The Selections Checked Below Apply To This Equipment

SIZE (W x L x H)

- ☐ 16 x 16 x 26", (406 x 406 x 660 mm) Gravity (Model SG-116)
- ☐ 20 x 20 x 38", (508 x 508 x 965 mm) Gravity (Model SG-120)
- ☐ 16 x 16 x 26", (406 x 406 x 660 mm) Prevacuum (Model SV-116)
- ☐ 20 x 20 x 38", (508 x 508 x 965 mm) Prevacuum (Model SV-120)
- ☐ 16 x 16 x 26", (406 x 406 x 660 mm) Isothermal (Model SI-116)
- ☐ 20 x 20 x 38", (508 x 508 x 965 mm) Isothermal (Model SI-120)

STEAM SOURCE

- ☐ Building Steam
- ☐ Electric Steam*
  - ☐ 208 Volts ☐ 240 Volts
  - ☐ 480 Volts
- ☐ Integral Indirect Stainless-Steel Clean Steam Generator (SD589)
- ☐ Electric Carbon-Steel Steam Generator*
- ☐ Electric Stainless-Steel Steam Generator*
  - ☐ 208 Volts ☐ 240 Volts
  - ☐ 480 Volts

DOORS

☐ Single ☐ Double

SINGLE DOOR MOUNTING

- ☐ Cabinet Enclosed/Freestanding
- ☐ Recessed

DOUBLE DOOR MOUNTING

- ☐ Recessed through One Wall
- ☐ Recessed through Two Walls †

OPTIONS

- ☐ Isothermal
- ☐ Liquid Air Cool (w/vacuum)
- ☐ Decontamination Cycle
- ☐ Clean Steam Piping to Chamber
- ☐ Air Detector System
- ☐ Reference Recorder
- ☐ Dual Controls
- ☐ Load Simulator
- ☐ Bio-Seal ‡
- ☐ RTD Load Probe(s) and F_0 Sterilization
- ☐ Air-Differential Seal (NOE) for Double Door Units
- ☐ 18-Cycle Capacity (six per screen)
- ☐ Back Panel for Single Door Cabinet Enclosed Unit
- ☐ One 1" Chamber Penetration for 16 x 16 x 26" (406 x 406 x 660 mm) Units Only (standard on 20 x 20 x 38")
- ☐ Vacuum Pump (3-Ph required)
- ☐ Backflow Preventer

ACCESSORIES

- ☐ Multiprobe Sealing Gland (20 x 20" [508 x 508 mm] units only)
- ☐ Loading Rack and Two Shelves 20 x 20 x 38" (508 x 508 x 965 mm) (std. on 16 x 16" [406 x 406 mm] units)
  - ☐ Single Door ☐ Double Door
- ☐ One Intermediate Shelf
  - ☐ 16 x 16 x 26" (406 x 406 x 660 mm)
  - ☐ 20 x 20 x 38" (508 x 508 x 965 mm)
- ☐ Loading Car (20 x 20" [508 x 508 mm] units only)
- ☐ Transfer Carriage (20 x 20" [508 x 508 mm] units only)
- ☐ Chamber Track Assembly (20 x 20" [508 x 508 mm] units only)
  - ☐ Single Door ☐ Double Door
- ☐ Loading Car, Transfer Carriage and Track Assembly (20 x 20" [508 x 508 mm] units only)
  - ☐ Single Door ☐ Double Door
- ☐ Seismic Tie-Down Kit

** 16 x 16 x 26" (406 x 406 x 660 mm) double door sterilizers are not available with electric steam generator.*

† Available for 20 x 20 x 38" (508 x 508 x 965 mm) double door sterilizers only. Contact engineering if mounting through two walls is required for a 16 x 16 x 26" (406 x 406 x 660 mm) sterilizer.

‡ Available on 20 x 20 x 38" (508 x 508 x 965 mm) double door sterilizers only.

Item _____

Location(s) _____

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- Emergency manual exhaust valve
- Electronic water saving control

Interior Chamber Dimensions

- 16 x 16 x 26" (406 x 406 x 660 mm)
- 20 x 20 x 38" (508 x 508 x 965 mm)

STANDARDS

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

- **Underwriters Laboratory (UL) Standard 544** as certified by ETL Testing Laboratories, Inc. (Some units with multiple options are not UL approved.)
- **Canadian Standards Association (CSA) Standard C22.2 No. 125.**
- **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** (16 x 16 x 26" [406 x 406 x 660 mm] units) **and R-0275** (20 x 20 x 38" [508 x 508 x 965 mm] units).
- **EMC Directive 89/336/EEC, 92/31/EEC, 93/68/EEC**
- **Low Voltage Directive 73/23/EEC, 93/68/EEC**
- **Machinery Directive 89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC**

FEATURES

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

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.

Electronic water saving control includes a condenser RTD to control the amount of water used in condensing the exhausted chamber steam.

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.

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.

One-piece insulation sleeve is fitted around exterior of the sterilizer vessel. The sleeve is sealed and held in place by hook-and-loop (tape strip) closures. Insulation is asbestos- and chloride-free, silicone impregnated, oil- and water-resistant fiberglass.

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

CYCLE DESCRIPTION

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

- **Gravity Cycle,** provided on gravity, prevacuum, and isothermal sterilizers, for the sterilization of heat- and moisture-stable goods at 100°C to 141°C (212°F to 285°F), and decontamination of bagged basic laboratory wastes. Gravity cycle utilizes the gravity air-displacement principle.
- **Liquid Cycle,** provided on gravity, prevacuum, and isothermal sterilizers, for the sterilization of liquids and media in vented borosilicate glass or metal containers at 100°C to 123°C (212°F to 254°F). Liquid cycle utilizes the optimal solution cooling feature, during exhaust (cooling) phase, to control the exhaust rate.
- **Prevacuum Cycle,** provided only on the prevacuum sterilizer, for efficient, high-volume sterilization of porous, heat- and moisture-stable materials at 121°C to 141°C (250°F to 285°F). Prevacuum cycle utilizes a mechanical air-evacuation system.
- **Isothermal Cycle,** provided only on the isothermal sterilizer, for processing of heat-sensitive and heat-coagulable solutions in vented borosilicate glass or metal containers at 78°C to 100°C (170°F to 212°F). Isothermal cycle utilizes steam to enhance temperature control and prevent layering of steam and air within the chamber. The process also maintains a positive pressure in the chamber to inhibit media boiling.
- **Liquid Air Cool** provides water to the jacket, and air pressure to the chamber to improve exhaust time for liquid loads, and to reduce boilover.
- **Decontamination Cycle** retains and decontaminates all waste in the chamber. Steam enters chamber through the drain, and air is removed

through the top of the chamber via a bacteria-retentive filter.

- **Leak Test Cycle,** provided only on the prevacuum sterilizer, for verification of door seal and piping system integrity. Cycle parameters are preprogrammed and fixed. The 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 the prevacuum sterilizer, for verification of effective removal of residual air in the chamber and load during testing. Test cycle determines if even and rapid steam penetration into test load has occurred. Cycle parameters are preprogrammed and fixed.

CONTROL SYSTEM

Design Features

Century control system monitors and controls all sterilizer operations and functions. The control system is factory-programmed with standard sterilizing cycles. Each cycle is adjustable to meet specific processing requirements. All control configuring is performed through the 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 1.1°C (2.0°F) below set point during the exposure phase, the 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 the components from moisture and heat generated during the sterilization process. A cooling fan with filter is installed in the housing compartment to maintain positive pressure within the compartment, keeping components cool and dust-free.

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

- **Touch-Sensitive Screen** features a 30-line x 40-character color graphics display. The control's touch screen color display features a wide viewing angle and high-visibility backlighting. 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 alarms/aborts 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. Printer can be disabled for processes not requiring documentation, such as melting agar.

  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; however, cycle values and other process adjustments cannot be made from this control panel.

Cycle configuration is performed by accessing the **change values** menu through the operating end touch screen. 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** requires entry of a four-digit access code to operate the sterilizer and/or change the cycle values. 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 or main menu screen, denying user access to the sterilizer or programming. Access to the sterilizer can be limited to six operators, each with a different access code.
- **Audible Signals** are adjustable. **Touch pad** and **end-of-cycle signals** can be adjusted to one of four sound levels (off, low, medium, or high) as required for the operating environment. **Alarm signal** can be adjusted to low, medium, or high (it cannot be turned off).
- **Print Format** allows selection of either a full or extended printout of the cycle information during processing.
- **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.

Typical In-Cycle Touch Screen Display

- **Pressure/Vacuum Display and Printout Units** in psig/In/Hg, Bar or psia. Recalibration is not required when changing pressure units.

Technical Data

Control system consists of microcomputer control boards and peripheral function circuit boards, located within the control board housing behind the front cabinet service panel above the chamber.

An **internal battery** backs up all cycle memory for up to 10 years. If a power failure occurs during a cycle, the battery backup system ensures cycle memory will be retained, and proper cycle completion will occur 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. The operator can manually abort the cycle if necessary.

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.

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

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. Vessel (20 x 20" [508 x 508 mm] units 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).

Door is suspended by cables attached to a counterweight. Chamber door is opened (lowered) and closed (raised) by pressing a foot pedal located on the same end as the door being operated. In case of a power or mechanical failure, door can be operated manually.

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.

Chamber Drain System

Drain system is designed to prevent pollutants from entering into the water-supply system and sterilizer. The automatic condensing system converts chamber steam to condensate and disposes condensate to waste. Cooling water flow is regulated by the waste line RTD to minimize water usage. Water supply shutoff valve is located behind the front cabinet service panel under the chamber.

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.

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.

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 and a louvered top panel enclose the sterilizer body and piping.

OPTIONS

Clean steam piping 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.

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 on 16 x 16 x 26" (406 x 406 x 660 mm) double door units.

30 kW electric stainless-steel steam generator is electrically powered, automatically filled with water, 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 on 16 x 16 x 26" (406 x 406 x 660 mm) double door units.

RTD load probes, load simulator, and F_0 sterilization automatically senses the load temperature during cycle operation. A single thermal load probe is sealed through the sterilizer vessel and manually placed in the product container, or in a load simulator 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, F_0 set points are available for each cycle, allowing for exposure phase termination based on the calculated F_0 value.

Bio-seal (20x20x38" [508 x 508 x 965 mm] double door units only) 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.

Air-differential seal (double door units only) is provided on the non-operating end of sterilizer, prevents passage of airborne particulate matter and debris from nonsterile area to the sterile area.

18-cycle capability provides an additional 12 cycles to the control system memory for a total of 18 cycles.

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 Title 24 California Code of Regulations, 1993 Amendment Section 2336(B).

Backflow preventer is installed on the sterilizer piping to prevent the unwanted reverse flow of water (or other substances) into the potable water supply.

ACCESSORY

One 1" threaded chamber penetration is optional on 16 x 16 x 26" units; standard on 20 x 20 x 38" units.

Multiprobe sealing gland (20 x 20 x 38" [508 x 508 x 965 mm] 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.

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 20 x 20 x 38" (508 x 508 x 965 mm) 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.
8. Backflow preventer device in water line, when required by local codes, is not provided by STERIS.

STERIS Corporation, Erie, Pennsylvania is an ISO 13485 certified facility.

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

UTILITY REQUIREMENTS

Sterilizer using "house" steam

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

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

Electrical – Controls (EC)
120 Volt, 50/60 Hz, 1-phase, 2.0 Amps.

Sterilizer Feed Water (FW)
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 provided by STERIS unless backflow preventer option is selected.

Sterilizer equipped with integral carbon steel steam generator

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

Generator Drain (GD)
1/2" ODT.

Electrical - Controls (EC)
120 Volt, 50/60 Hz, 1-phase, 9.5 Amps.

Electrical - Generator (E)
208 Volt, 50/60 Hz, 3-phase, 83.2 Amps;
240 Volt, 50/60 Hz, 3-phase, 72.2 Amps;
or
480 Volt, 50/60 Hz, 3-phase, 37 Amps.

Sterilizer Feed Water (FW)
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 (GFW)
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 provided by STERIS; not supplied on unit.

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

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 grain hardness*

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

Condition	Nominal Conditions	Maximum Conditions
Temperature	as supplied	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 - ohms/cm†	2000-6000	26000

** 17.1 mg/L = 1.0 grain hardness*

†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 ohms/cm (38.5 micro-ohms conductivity min.). Do not connect to treated water (distilled, reverse osmosis, deionized) unless water resistivity is determined to be acceptable. If water exceeds 26,000 ohms/cm, contact STERIS engineering service for information concerning modifications required to the generator control system.

Sterilizer equipped with integral stainless-steel steam generator

Sterilizer Feed Water (FW)
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 (GFW)
1/2" NPT, 20 to 50 psig (137.9 to 344.7 kPa) dynamic. Requires deionized, distilled or reverse osmosis water with minimum resistivity of 1.0 megohm/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.

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

Generator Drain (GD)
1/2" ODT.

Electrical – Controls (EC)
120 Volt, 50/60 Hz, 1-phase, 9.5 Amps.

Electrical – Generator (E)
208 Volt, 50/60 Hz, 3-phase, 83.2 Amps;
240 Volt, 50/60 Hz, 3-phase, 72.2 Amps;
or
480 Volt, 50/60 Hz, 3-phase, 37 Amps.

CHAMBER SIZES	DIMENSIONS - inches (mm)							
	A*	B*	C	F	H*	J*	K*	L†
16 x 16 x 26 (406 x 406 x 660)	25‡ (635)	30 (762)	35-3/4 (908)	26 (660)	25-1/2 (646)	18 (457)	40 (1016)	24-1/8 ± 1/4 (613 ± 6)
20 x 20 x 38 (508 x 508 x 965)	27‡ (686)	32 (813)	45-1/8 (1146)	30 (762)	29-1/2 (747)	20 (508)	52 (1321)	28-1/8 ± 1/4 (714 ± 6)

** Minimum Service Clearance*

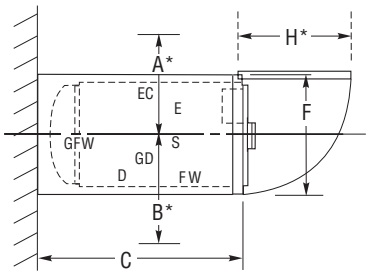
† Wall Opening

‡ If recessed through one wall and using "house" steam, 18" (457 mm) for 16 x 16 x 26" (406 x 406 x 660 mm) unit; 20" (508 mm) for 20 x 20 x 38" (508 x 508 x 965 mm) unit.

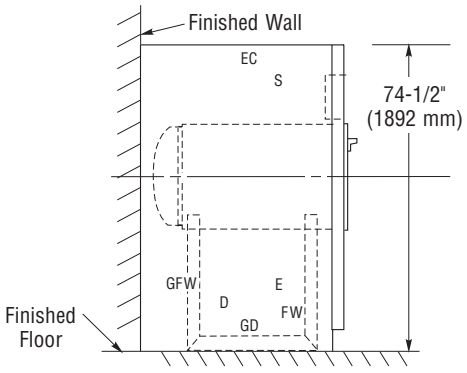
Dimensions shown here are typical, and subject to change without notice.
REFER TO STERIS EQUIPMENT DRAWINGS FOR COMPLETE AND DETAILED INSTALLATION SPECIFICATIONS.

SINGLE DOOR

Cabinet Enclosed

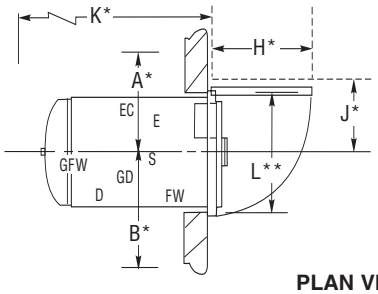


PLAN VIEW

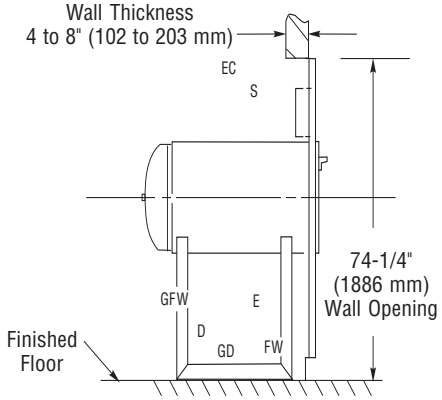


SIDE VIEW

For Recessing



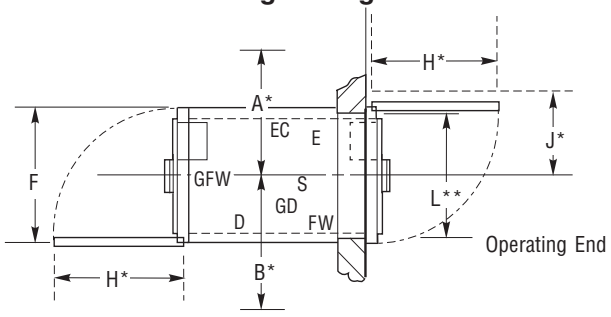
PLAN VIEW



SIDE VIEW

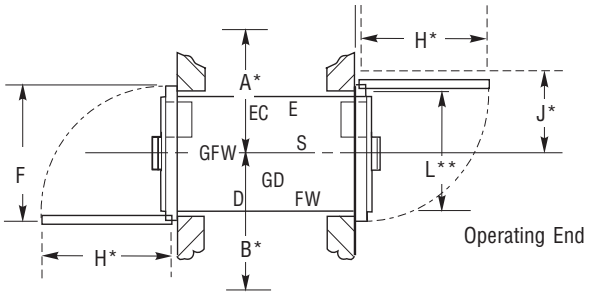
DOUBLE DOOR

For Recessing Through One Wall

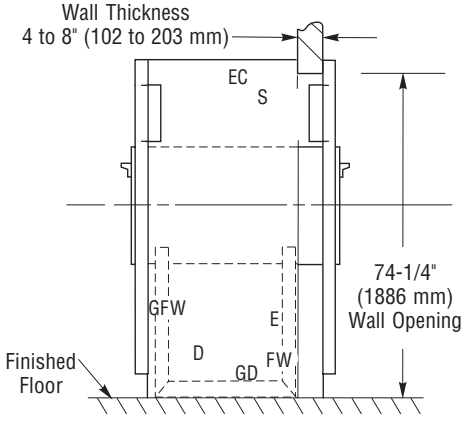


PLAN VIEW

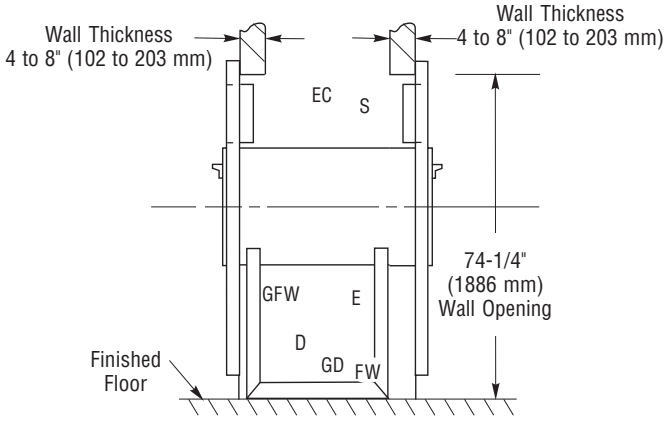
For Recessing Through Two Walls (for 20 x 20 x 38" [508 x 508 x 965 mm] Sterilizer only)



PLAN VIEW



SIDE VIEW



SIDE VIEW

ENGINEERING DATA

SIZE in (mm)	HEATING	MAXIMUM OPERATING WEIGHT[1] lbs (kg)		HEAT LOSS [2] BTU/hr at 70°F (21°C)						
				Single Door			Double Door			
				Cab't Enc	Recessed		Recessed One Wall		Recessed Two Walls	
		Single Door	Double Door	To Room	Front of Wall	Back of Wall	Front of Wall	Back of Wall	At Each End	Between Walls
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
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

SIZE in (mm)	HEATING	UTILITIES CONSUMPTION								
		Water[3]						Steam		
		Cold			Hot[5]					
		Peak gpm (Lpm)	Per Cycle[4] gal/cycle (L/cycle)	Idle gph (Lph)	Peak gpm (Lpm)	Per Cycle[4] gal/cycle (L/cycle)	Idle gph (Lph)	Peak[6] lb/hr (kg/hr)	Per Cycle[4] lb/cycle (kg/cycle)	Idle lb/hr (kg/h)
16 x 16 x 26 (406 x 406 x 660)	Steam	15 (57)	140 (530)	7 (26)	N/A	N/A	N/A	83 (38)	18 (8)	7 (3)
	Electric	15 (57)	140 (530)	7 (26)	1 (4)	3 (11)	1 (4)	N/A	N/A	N/A
20 x 20 x 38 (508 x 508 x 965)	Steam	15 (57)	140 (530)	10 (38)	N/A	N/A	N/A	116 (53)	21 (10)	7 (3)
	Electric	15 (57)	140 (530)	10 (38)	1 (4)	4 (15)	1 (4)	N/A	N/A	N/A

NOTE: *Peak values are based on a unit warmed up to normal operating temperatures.*

[1] *Based on chamber fully loaded with water flasks.*

[2] *At 70°F (21°C).*

[3] *Backflow preventer device in water line, when required by local codes, is installed by others.*

[4] *Per cycle values were based on a 270°F prevac cycle with 4:00 sterilize time and 20:00 dry time, and chamber fully loaded with 17-lb instrument tray.*

[5] *Hot water recommended for units equipped with electric steam heat.*

[6] *Peak steam demand (lbs/hr) may vary depending on operating conditions.*

Additional utilities are required for units with the following options:

- 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, please contact:

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