STERIS®

AMSCO® EAGLE® 3017 100% EO STERILIZER/AERATOR

APPLICATION

For use in sterilizing heat and moisture sensitive materials unable to withstand the high temperature and turbulence of conventional steam sterilization.

DESCRIPTION

Amsco Eagle 3017 100% Ethylene Oxide (EO) Sterilizer/Aerator with digital printer and optional remote control capability (sold separately) is equipped with the patented Envirogard™ exhaust system, which further reduces possible EO levels in the breathing zone. This sterilizer/aerator uses single dose gas cartridges (sold separately) as the EO supply. Control is provided with preset, qualified cycle parameters. Parameters can be adjusted by user to meet specific applications.

IMPORTANT: If preset cycle parameters are changed, customer must validate efficacy of the changed cycle.

Sterilization

Sterilizer is equipped with four preset cycles:

- HI_TEMP cycle for dynamic conditioning at 130°F (54°C). This cycle can be used for most heat and moisture sensitive materials. Factory set sterilize time: 1.0 hour. Adjustable sterilize time: 1.0 hour (minimum) to 99 hours - 99 minutes.
- LO_TEMP cycle for loads requiring lower temperatures and less humidity at 100°F (38°C). Factory set sterilize time: 4-1/2 hours. Adjustable sterilize time: 4-1/2 hours (minimum) to 99 hours - 99 minutes.
- Adjustable sterilize temperature range is 100°F (38°C) minimum, to 131°F (55°C).

Chamber remains in vacuum condition throughout the sterilization cycle. At the end of the sterilization phase, a 30-minute air wash is followed by a preset aeration phase.

(Typical only - some details may vary.)

Aeration

Aeration time is factory set for each cycle as follows:

- HI_TEMP cycle (at 130°F [54°C], with 1 hour sterilize time) - aeration time is 12 hours.
- LO_TEMP cycle (at 100°F [38°C], with 4-1/2 hours sterilize time) - aeration time is 36 hours.

Aeration within the chamber further reduces potential operator exposure to environmental EO by eliminating the transfer of the load to a separate aerating unit. The unit can be operated as a sterilizer only.

NOTE: For any item to be processed, always follow manufacturer's recommendations for the required sterilization exposure time, temperature, and aeration time.

The Selections Checked Below Apply To This Equipment

DOOR ARRANGEMENT
- ☐ Single Door
- ☐ Double Door

ELECTRICAL POWER
- ☐ 120 VAC, 50/60 Hz
- ☐ 240 VAC, 50/60 Hz
- ☐ 100 VAC, 50/60 Hz

INSTALLATION PACKAGES
- ☐ Freestanding Support Frame
  - ☐ Single Deck
  - ☐ Double Deck
- ☐ Recessed Mount
  - ☐ Single Unit/Single Deck
  - ☐ Single Unit/Double Deck
  - ☐ Double Unit/Double Deck
- ☐ Recessed Modular Wall Mount for use with Small Amsco Aerator
  - ☐ Single Unit/Single Deck
  - ☐ Single Unit/Double Deck
  - ☐ Double Unit/Double Deck

OPTIONS
- ☐ 50 cfm Disposer with Interconnect Kits*
- ☐ Small Aerator (4-basket capability)*

ACCESSORIES
- ☐ 100% EO Single Use Gas Cartridges (Carton of 12)*
- ☐ Universal Chrome Loading Baskets
- ☐ Remote Control
- ☐ Height Adjustable Transfer Carriage*
- ☐ Seismic Tie-Down Kit

** See separate product literature.*

Item _____

Location(s) _____

_____

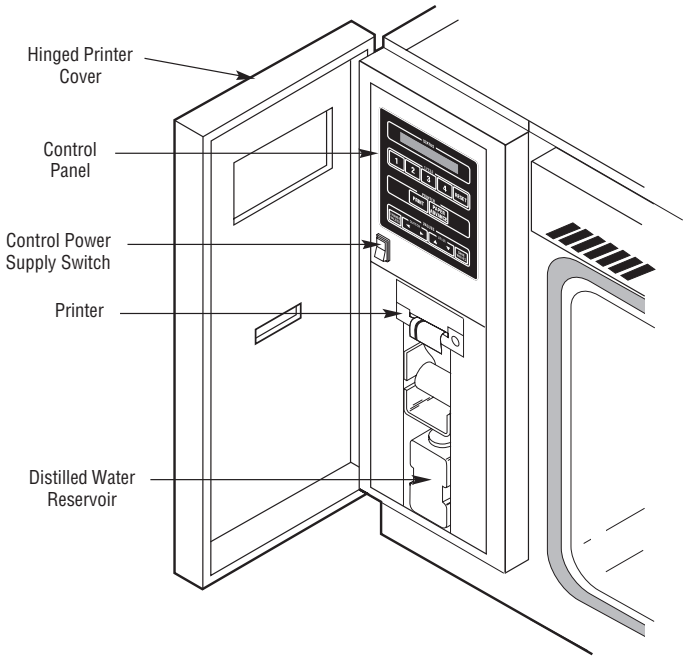
Interior Chamber Dimensions

- 17 x 15 x 32-1/2"
  (432 x 381 x 823 mm)

STANDARDS

Every sterilizer/aerator meets the following listings and standards and carries the appropriate symbols:

- **Underwriters Laboratory (UL) Standard 3101** as certified by ETL Testing Laboratories, Inc.
- **Canadian Standards Association (CSA) Standard C22.2 No. 151** as certified by ETL.
- **European Union Medical Device Directive (93/42/EEC).**
- **Japanese Safety Standards per IEC 1010-1 -** 100 VAC units only.



Eagle® Series 3017 Control Components

CONTROL SYSTEM

Design Features

Eagle® Series 3000 Control System monitors and controls system operations and functions. Cycle progresses automatically through the sterilization and aeration phases. The controller indicates cycle completion visually and audibly. The control features programmed cycle parameters conforming to the Association for the Advancement of Medical Instrumentation (AAMI) standards for ethylene oxide sterilization and aeration. Control interface is designed to help prevent inadvertent selection of cycles.

Power disconnect switch is located behind a removable left side cabinet panel. Under normal operation, this switch is always left on and is not designed to be routinely accessed.

A hinged door on the left side of the sterilizer provides access to:

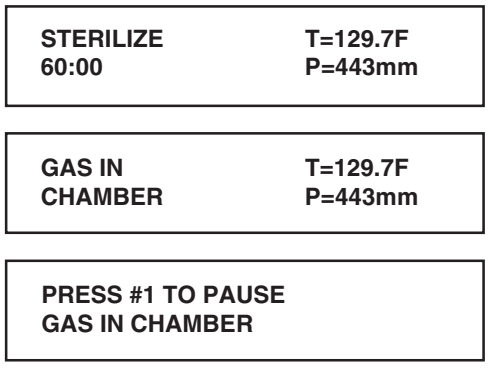
- **Control power switch** for routine power control of the sterilizer/ aerator's primary functions.
- **Control panel** with display window and touch pads.
  - » **Display window** features a 2-line x 20-character vacuum fluorescent display. It shows sterilizer status, time (time of day, sterilize time, aerate time), temperature, pressure, warnings, and instructional messages. The display also indicates certain abnormal conditions that may exist, either when power is on or when a cycle is in progress. All messages are complete readouts with no codes to be cross-referenced.
  - » **Numerical cycle selector touch pads** (1, 2, 3, 4) start cycles previously programmed by the values touch pads. The operator must press the touch pad twice to initiate a cycle, minimizing chances of an incorrect cycle selection. When first pressing a cycle selector touch pad, the display indicates the selected cycle and sterilization parameters; pressing the selector pad a second time starts the cycle. The cycle does not start unless the sterilizer door(s) are properly locked.
  - » **Reset touch pad** resets control in case an incorrect cycle is started.
  - » **Print touch pad** provides a printout of the cycle phase, time of day, chamber temperature, chamber pressure, and vaporizer temperature.
  - » **Paper advance touch pad** advances the printer paper.
  - » **Values touch pads** (Save Values and Change Values) assign cycles and cycle values to the four numerical cycle selector touch pads. Sterilize temperature, sterilize time, and aeration time for each cycle can be adjusted and stored in the control memory for future application. Cycle values can also be adjusted for single applications, when required.
- **Printer.** An alphanumeric impact type printer provides an easy-to-read permanent printed record of all pertinent cycle data. The operator can easily verify that cycle parameters are satisfied. Computer generated printouts include: date, cycle number, sterilizer number, starting time of each cycle, temperature selected, key transition points in cycle, and any abnormal conditions that might impair the sterilization or aeration process. A cycle summary is also provided. The printer is programmed to print data from the bottom to the top of printer tape, but can be changed in the field by a STERIS service technician.

Double door sterilizers are equipped with a **non-operating end control** which includes four numerical cycle selector touch pads for initiating cycles, a reset touch pad, and a display window. The display window is the same as the operating-end window and concurrently shows the same messages. The non-operating end control does not include a printer.

Hospital mode operator-selectable feature/functions. The sterilizer/aerator is provided with a sophisticated, flexible control system that allows adjustment of additional features by using the change values touch pads. These features include:

- **Date and time** for changing date and time.
- **Access code for setting cycles and cycle values.** This requires entry of a four-digit access code in order to change cycle values. When this feature is enabled, the control requests entry of a four digit **access code** before allowing access to the critical change values features (including cycle parameters). If the access code is not properly entered, the display advances to the first set of cycle parameters not requiring an access code. Up to four cycles may be locked under the access code.
- **Cycle print format** permits selection of a normal printout (complete cycle data) or a condensed printout (minimum required cycle data).
- **Time display and printout units** permits selection of either standard AM/PM or 24 hour.
- **Date format** can be set to display and print month/day/year (M/D/Y), or year/month/day (Y/M/D), or day/month/year (D/M/Y).
- **Cycle complete intermittent tone** suppresses end-of-cycle audible signal if not required, but all abnormal-condition warning signals remain functional.
- **Power failure** can be set to have cycle resume or hold, once the power returns.
- **Language.** The operator can select from English, French, or Spanish.
- **Sterilizer number.** The operator can assign a 2-digit identifying number, using numerals, letters, or spaces. The sterilizer number is recorded on all cycle printouts.
- **Lab mode operator-selectable feature/functions.** This mode offers the same features and functions adjustability as the hospital mode as well as several additional value changes to enable the operator to program special cycles and cycle values for specific processing needs.

If an optional **EO monitor alarm** has been installed (not provided by STERIS) with the unit, the sterilizer's control can be adjusted to abort or hold the cycle when the presence of EO gas is detected in the area surrounding the sterilizer/aerator. This adjustment is available only in the Service Mode.



Typical Display Screens

Technical Data

Each sterilizer has its own automatic control. Multiple 8-bit parallel microcomputers hold programmed instructions with factory set default values. Control system includes a control PC board located behind the control front panel. Removal of the left side cabinet panel allows access to the control PC board.

An internal battery backs up all cycle memory so if a power failure occurs during a cycle, proper cycle completion can still occur, and cycle memory will be retained. When power is lost, the cycle is held in the phase until power is restored. Once power returns, the event is recorded on the printout and the cycle resumes or holds, depending on the previously programmed software power failure selections.

Control board circuits monitor sterilizer functions and include an analog to digital converter, a watchdog timer to protect AC output, and an on-board power supply circuit. Circuit boards employ a digital self-calibrating system which only requires attention when replacing boards in the unit. Quartz crystals maintain precision timing.

A **Resistive Thermal Device** (RTD) senses temperature and a strain-gauge-type pressure transducer senses pressure. Analog signals from these sensing devices are converted into digital signals and provide accurate control inputs and readouts throughout the sterilization and aeration phases. Temperature and/or pressure-sensor failure initiates an alarm condition, which sounds an audible tone and prints a message.

Aeration System

In-chamber load aeration is carried out at the selected sterilization temperature. Outgassing EO is removed from the chamber by heated air wash and vacuum.

At the completion of the aeration phase, a COMPLETE message is displayed and an audible signal sounds. If HI_TEMP sterilization was selected, minimum aeration time is 12 hours. If LO_TEMP sterilization was selected, minimum aeration time is 36 hours.

CONSTRUCTION

Chamber Assembly

The chamber is aluminum. A single door sterilizer includes a door with a silicone rubber gasket and a bolted-on backhead with a silicone rubber gasket. Double door sterilizers include a door on both ends of sterilizer with silicone rubber gaskets.

Fiberglass blanket insulation on the outside of the chamber wall, door(s), and backhead is 1.0" (25 mm) thick (nominal) with polyethylene covering on its outward side. Insulation is held in place by pressure sensitive tape.

Operating Components

Automatic door locking mechanism keeps the sterilizer door(s) locked during the entire cycle. After completion of the sterilization cycle, air pressure is used to unlock the door(s). If during sterilizer operation either electrical power or air pressure is lost, the sterilizer door(s) cannot be opened. When the sterilizer is in standby mode, the door(s) can be opened and closed freely.

Vacuum system consists of an air pressure regulator valve and an air ejector requiring 80 psig (dynamic) of dry, oil free compressed air to perform the following phases of the sterilization cycle: prevacuum evacuation, exhaust, air wash, and aeration. The chamber remains in a vacuum condition throughout the sterilization cycle.

Chamber heating is achieved through electric strip heaters attached to the chamber sides, bottom wall, sterilizer door(s) and, if a single door unit, to the backhead. Heaters operate on 100, 120, or 240 Volt, 50/60 Hz, single phase.

Humidity system consists of a distilled water reservoir with an integral low water level alarm (one quart capacity), a water injection system, and electrically heated vaporizer to provide humidity for chamber and load. The reservoir must be filled manually and, when full, holds enough water for approximately 25 cycles.

Load-conditioning system heats and humidifies the load according to the cycle parameters selected by the operator.

The **EO gas cartridge** is manually installed in a recess located on the left-side chamber wall. The cartridge contains enough EO gas to sterilize one load per cycle. The controller assures the sterilizer door(s) are locked and all the programmed parameters (chamber vacuum level, chamber temperature, vaporizer temperature, and humidity level) are satisfied before puncturing the EO cartridge. The released EO gas passes through an electrically heated vaporizer before entering the chamber.

NOTE: For guidelines and recommendations on the control of occupational exposure to EO in health industries, refer to STERIS publication M1846EN, Ethylene Oxide Safety Guidelines.

An air-filtering system admits room air to the chamber through a bacteria-retentive filter during the air wash and aeration cycle phases.

The **Envirogard™ local exhaust system** door vent adapter is connected to a dedicated exhaust system (not provided by STERIS). This system is for the removal of any remaining EO vapors when the sterilizer door is opened. This system, in conjunction with the post-sterilization program, is designed to reduce environmental EO in the breathing zone to below the OSHA action level of 0.5 ppm, expressed as a time-weighted average (TWA) for an eight hour work shift, in an area having at least 10 air changes per hour. If air flow through Envirogard fails during the cycle, the cycle will continue to completion, but an air flow assurance feature will keep the sterilizer door(s) sealed and locked until the air flow in the local exhaust system returns.

An **exhaust system** line from the chamber must be connected either to an EO disposer or to a roof vent. Local regulations may prohibit the discharge of EO directly into the atmosphere.

Area monitor interface provides remote terminal points for direct connection to separate remote gas monitoring device(s). Remote gas monitoring devices are not supplied with this sterilizer. If the area monitor detects the presence of EO gas, the sterilizer control stops the cycle if the EO cartridge has not been punctured. If in the sterilization phase, the control will permit completion of the phase but will not progress into the exhaust phase.

Other Components

The following are furnished to obtain a complete working unit, ready for (but not including) connection to the building utility service lines.

Solenoid valves and switches (required) are used in this sterilizer design to simplify piping and increase serviceability.

Pipe connections are located on the top and left side of the sterilizer.

Electrical connection is located on the left side of the sterilizer.

Air pressure regulator is provided to reduce air pressure supplied to the air ejector and door locking mechanism.

Air supply filter and refrigerated air dryer are supplied for connection between the compressed air supply and the sterilizer/aerator during installation. The air dryer is sized to handle the air flow requirement for one or two sterilizer/aerators.

INSTALLATION PACKAGES

Although designed as a tabletop unit, three different installation packages are available for mounting the Eagle 3017 sterilizer/aerator. These packages can accommodate one or two Eagle 3017 sterilizer/aerators.

Freestanding support frames are provided for mounting single or double door units anywhere inside a room. The frame includes the mounting rack. Two types of frames can be provided. The single deck type supports a single sterilizer/aerator, the double deck type supports either one or two sterilizer/aerators. Each frame is supplied with casters for ease of movement.

Recessed mount installation package allows mounting of single door units into a wall. Installation packages include an installation kit, mounting frame with casters (so the frame can be easily removed from the wall for maintenance and service), track guides, and a stainless-steel trim package. Installation packages are available for a single unit on a single deck support frame, a single unit on a double deck support frame, or two units on a double deck support frame. Recessed mounting of double door pass-through unit(s) is available as a specially engineered option.

Recessed/modular wall mount installation package is for enclosing both a recessed ethylene oxide aerator and recessed Eagle 3017 sterilizer/aerator(s). Installation packages include an installation kit, mounting frame with casters (so that the frame can be easily removed from the wall for maintenance and service), track guides, and a stainless-steel fascia panel with one access door, and stainless-steel wall panel to cover the sterilizer(s) and aerator. Installation packages are available for a single sterilizer on a single deck support frame, a single sterilizer on a double deck support frame, or two sterilizers on a double deck support frame. Wall trim accommodates only one aerator. Recessed mounting of double door pass-though unit(s) is available as a specially engineered option.

NOTE: An access door is supplied for the lower position on all single mounted recessed units. On double deck mounting frames with a single unit, the door can later be removed if a second sterilizer is to be installed in the frame.

OPTIONAL FEATURES

Remote control can be located up to 1000' (305 m) from the sterilizer. The separate control is equipped with a display window, four cycle selector touch pads, and reset touch pad.

The sterilizer/aerator is designed to **interface with an Amsco EO disposer** to convert EO to carbon dioxide and water vapor. This disposer is available as a separate item. One interface kit is required for each 50 cfm disposer. A single interface kit allows connection to a maximum of two Eagle 3017 sterilizers. For more details on this system, refer to separate product literature available from your STERIS representative.

MATERIAL HANDLING ACCESSORIES

Two wire baskets, 15-1/2" (394 mm) wide x 7" (178 mm) high x 31-1/2" (800 mm) long, are shipped with the sterilizer. The baskets include two carrying handles and mounting brackets for stacking two or more baskets at one time, for ease of sterilization, aeration, or storage. Additional baskets are available from STERIS.

PREVENTIVE MAINTENANCE

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

STERILITY ASSURANCE PRODUCTS

A complete line of process validation and protective barrier products, compatible with the Eagle 3017 sterilizer/aerator, are available from your STERIS representative.

ENGINEERING DATA

Electrical	Maximum Operating Weight	Shipping Weight	Shipping Dimension (WxHxL)	Heat Loss		Air Consumption
				Peak	Average	
100 and 240 VAC, 50/60 Hz (transformer included)	300 lbs (136 kg)	407 lbs (185 kg)	36-3/4 x 36-3/4 x 40-3/4" (933 x 933 x 1035 mm)	872 BTU/hr	785 BTU/hr	7 cfm
120 VAC, 50/60 Hz	300 lbs (136 kg)	365 lbs (165 kg)	36-3/4 x 36-3/4 x 40-3/4" (933 x 933 x 1035 mm)	872 BTU/hr	785 BTU/hr	7 cfm

NOTES

1. Refer to equipment drawing 65435-641 for actual installation specifications.
2. Pipe sizes shown indicate terminal outlets only. Building service lines (not provided by STERIS) must supply the specific pressures and flow rates. A shut off valve (not provided by STERIS) capable of being locked out, must be installed in the compressed air supply line near the sterilizer.
3. Disconnect switches (not provided by STERIS), capable of being locked out, must be installed in electric supply lines near the equipment.
4. Clearances shown are the minimum required for servicing the equipment.
5. It is recommended that gas sterilizer equipment be maintained and operated in an area where temperature is less than 100°F (38°C). The area **must** have at least 10 air changes per hour.
6. Flexible service lines are required for sterilizers that must be moved for service.
7. Check local codes for installation requirements.
8. STERIS assumes no responsibility for changes made necessary through failure to observe these specifications. Specifications and descriptions are subject to change without notice.
9. Failure to supply dry, oil free air to this sterilizer may lead to equipment malfunction and will void the warranty.

UTILITY REQUIREMENTS

3017 Sterilizer/Aerator:

Electrical - Sterilizer (E)

100 V, 50/60 Hz, 1-Phase, 17 A;
120 V, 50/60 Hz, 1-Phase, 14 A; or
240 V, 50/60 Hz, 1-Phase, 8.0 A,
terminal block connection.

Chamber EO Gas Exhaust (G)

3/8" (10 mm) NPT for connection to a EO gas disposer, or direct pipe outside to roof vent. Exhaust line must be capable of handling EO gas and withstanding positive air pressure levels. Do not connect to ventilation duct. Exhaust line length 200' (62 m) maximum.

Air Supply (A)

1/4" (6 mm) NPT, 80-100 psig (5.6-7.0 bars, gauge); 50°F (10°C) maximum dew point. Supply must be dry and oil free. Compressor used must be oilless type.

Ventilation Duct (V)

4.0" (102 mm) ODT duct for connection to outside dedicated non-recirculating exhaust (50 cfm [1.4 m^3/min] for a single door unit, and 100 cfm [2.8 m^3/min] for a double door unit). Sterilizer requires minimum of 1.0 mm Hg (0.53" H_20) negative static pressure.

Water for Humidity

A 1.0 quart (1.0 L) reservoir is located on bottom shelf behind the door on the left side of the chamber. Reservoir requires manual filling with either distilled, deionized, or reverse osmosis water, with minimum resistivity of 1.0 megohm/cm (maximum of 1.0 micro-siemen).

EO Cartridge

One per cycle, manually installed.

Refrigerated Air Dryer:

Electrical

Terminal Box: 120 V, 60 Hz, 1-Phase, 3.3 A, 1/6 HP motor, 0.26 kW or 230 V, 50 Hz,1-Phase, 1.3 A.

Air In/Out

1/4" (6.0 mm) NPT or
3/8" (10 mm) ODT.

Drain

1/4" (6 mm) OD hose.

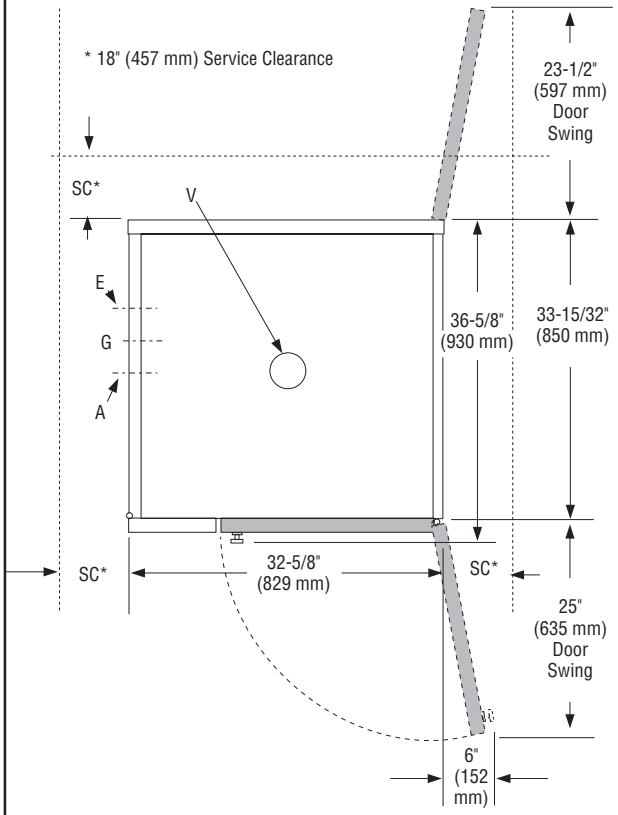
CUSTOMER IS RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE LOCAL AND NATIONAL CODES AND REGULATIONS.

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

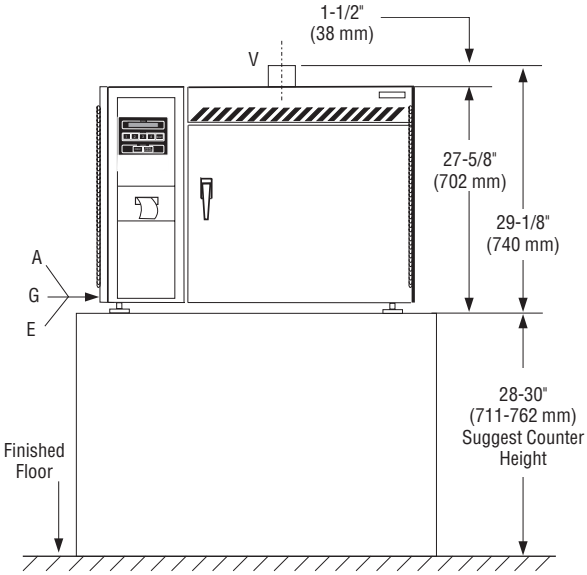
The base language of this document is ENGLISH. Any translations must be made from the base language document.

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

TABLETOP MOUNTING - SINGLE or DOUBLE DOOR



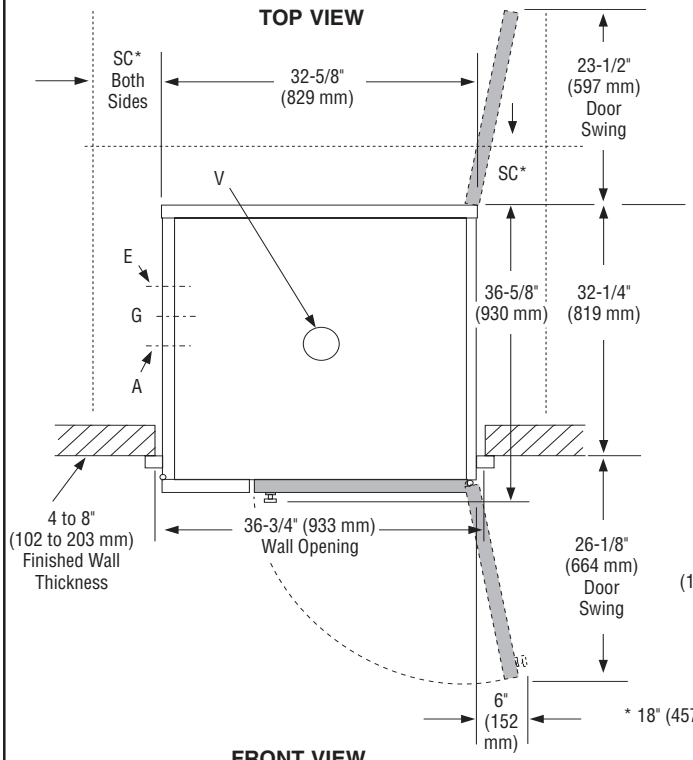
TOP VIEW



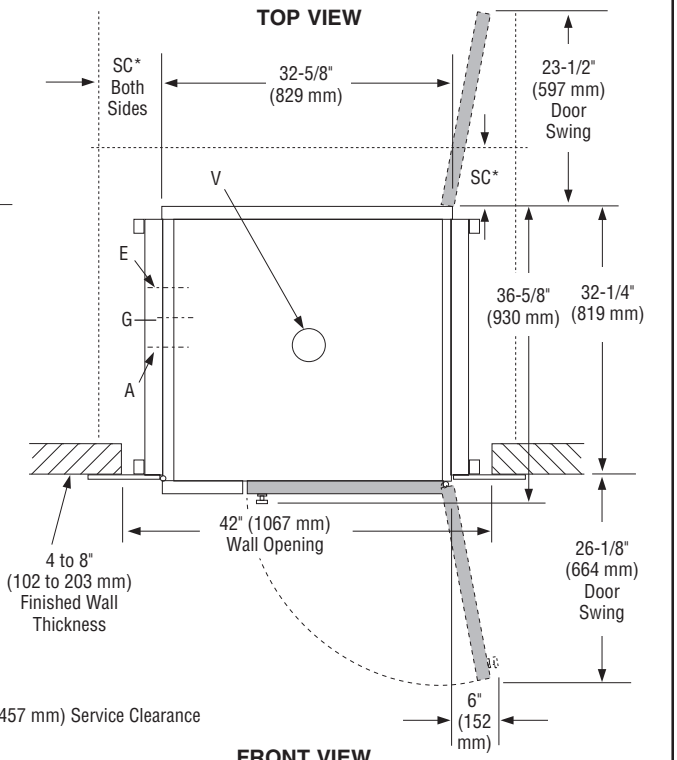
FRONT VIEW

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

SINGLE DECK MOUNTING FRAME
RECESS MOUNTING UNIT - SINGLE OR DOUBLE DOOR

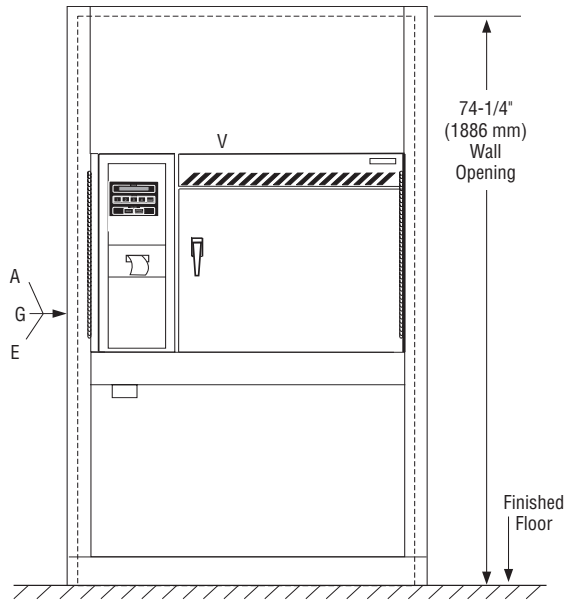


DOUBLE DECK FRAME - RECESS MOUNTED
UNITS - SINGLE OR DOUBLE DOOR

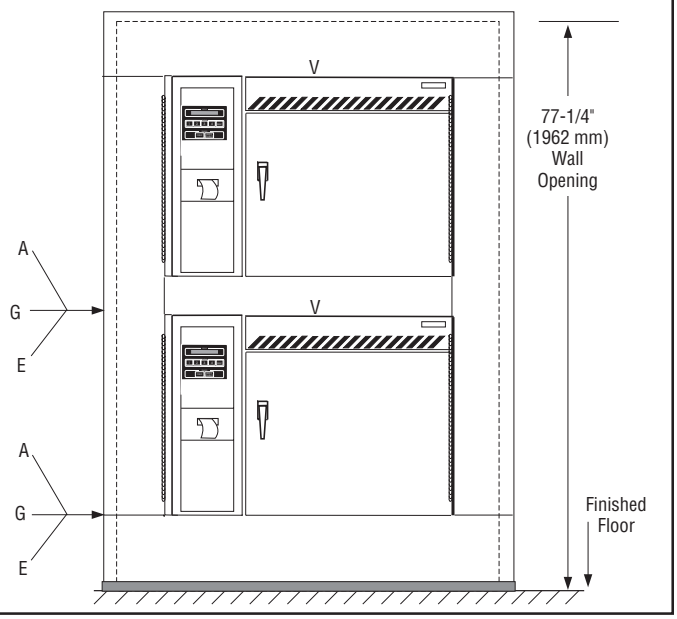


* 18" (457 mm) Service Clearance

FRONT VIEW



FRONT VIEW



For further information, please contact:

STERIS®

STERIS Corporation
5960 Heisley Road
Mentor, OH 44060-1834 ▪ USA
440-354-2600 ▪ 800-548-4873
www.steris.com