STERIS®

AMSCO® EVOLUTION™ FLOORLOADER STEAM STERILIZER

APPLICATION

This sterilizer is configured for prevacuum sterilization of heat- and moisture-stable materials used in healthcare facilities. These units are equipped with prevacuum, Steam Flush Pressure Pulse (SFPP), gravity, liquid, DART (Bowie-Dick) and vacuum leak test cycles.

DESCRIPTION

Amsco® Evolution™ Floor Loading Steam Sterilizers are to be easy to use and are equipped with the latest state-of-the-art technology.

Primary Product Features

- **All plumbing components are mounted to a free-standing, modular rack (stand).** The stand connects to the core sterilizer assembly during installation.
- The sterilizer's **horizontal-sliding door** travels horizontally right to left to open.
- An **advanced, PC-based control system** employs user-friendly interface screens, with enhanced graphics.
- 8.4" (214 mm) color touch screen display.
- Ink-on-paper impact printer.
- Standard communication interface with most PC-compatible peripheral devices (e.g., data collection systems, printers).

Typical only - some details may vary.

- Control is designed to accommodate remote monitoring and instrument tracking interfaces.

STANDARDS

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

- **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 45 psig (3.1 bar).
- **Pressure Equipment Directive, PED 97/23/EC**
- **Underwriters Laboratory (UL) Standard 61010-1** as certified by Intertek Testing services.
- **Canadian Standards Association (CSA) Standard C22.2, No. 1010** as certified by Intertek Testing services.

FEATURES

26 x 61" (660 x 1550 mm) Chamber Cross-section sized to allow for efficient, high-volume processing of sterilization containers, trays and packs.

Power Door slides open or closed horizontally, using a pneumatically-driven cylinder mechanism. Horizontal-sliding door is controlled from control panel push buttons. Double door

The Selections Checked Below Apply To This Equipment

TYPE

☐ Prevacuum
☐ Steam Flush Pressure Pulse (SFPP)

MODEL NUMBER/SIZE

☐ HC2000 / 26 x 61 x 49" (660 x 1550 x 1245 mm)
☐ HC3000 / 26 x 61 x 72" (660 x 1550 x 1850 mm)

STERILIZER ELECTRIC SERVICE

☐ 208/240 V ac, 50/60 Hz, 3-Phase, 12 A/Phase
☐ 480 V ac, 50/60 Hz, 3-Phase, 6 A/Phase

STEAM SOURCE

☐ House Steam

STEAM PIPING

☐ Copper/Brass
☐ Stainless Steel

DOOR CONFIGURATION

☐ **Single-Door**
  ☐ Horizontal-Sliding (Left-Hand)
☐ **Double-Door**
  ☐ Horizontal-Sliding Door (Left-Hand/Right-Hand)

NOTES: *Operating end slide direction listed first, Non-operating end slide direction listed second. (Direction of door movement is right-hand to left-hand, as viewed from the sterilizer's operating end.)*

SINGLE-DOOR MOUNTING

☐ Recessed

DOUBLE-DOOR MOUNTING

☐ Recessed through Two Walls

ACCESSORIES

☐ One Loading Car for 49" (1245 mm) Chamber Length
☐ Two Loading Cars for 72" (1850 mm) Chamber Length

REMOTE MONITORING

☐ ProConnect™ Response Center (Remote Monitoring, Priority Technical Support, Customer Care Center Access, Equipment Performance Reports)

Item _____
Location(s)_____
_____

Model Number	Internal Dimensions Inches (Millimeters)	Cubic Inches	Cubic Feet
HC2000	26 x 61 x 49" (660 x 1550 x 1245 mm)	77,714	45.0
HC3000	26 x 61 x 72" (660 x 1550 x 1850 mm)	144,192	66.1

configurations are supplied with controls at both ends of the sterilizer.

Software 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 printed record of all calibration data for verification to current readings.

Pneumatic valves are used in piping for steam, water, door and exhaust control.

Principle piping components and the primary control assembly are mounted to a **separate, modular support rack** (plumbing stand). The plumbing stand connects during installation to the core chamber, allowing for increased access for service and maintenance procedures when necessary.

ProConnect Response Center – Minimize service response time and unscheduled downtime on your equipment. Secure, internet-based, 24/7 remote monitoring enables both Predictive Maintenance as well as rapid alerts to STERIS when there is an equipment alarm. Also included are priority technical support, online parts ordering, equipment performance dashboards and scheduling service at eservice.steris.com.

UTILITIES CONSERVATION FEATURES

Resistive Thermal Detectors (RTD) are installed for precise sterilizer temperature control and conservation of utilities. The dual element 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 an RTD to minimize the amount of water used in condensing the exhausted chamber steam and condensate.

An **automatic utilities start-up/shutdown** function enables the Customer to conserve utilities. Shutdown may be programmed to activate at the end of any designated cycle or time of day. When activated, the 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.

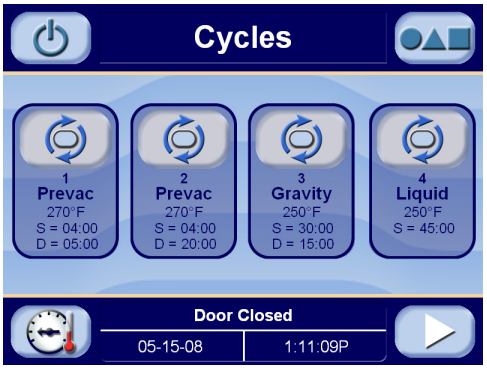
Two-stage vacuum pump is supplied on all units and draws the chamber to specified vacuum levels, reducing cycle time by shortening conditioning and exhaust times. Since a water ejector is not used, water consumption is reduced.

PROCESSING CYCLES

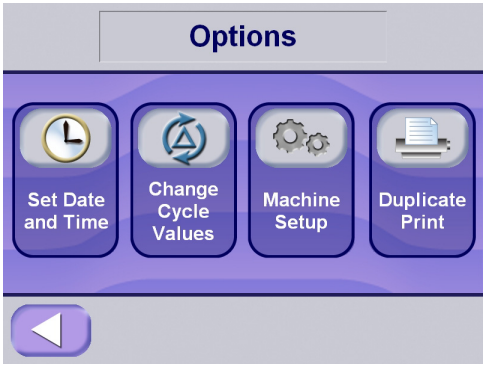
All processing cycles factory-programmed into the sterilizer control have been validated to **AAMI/ANSI ST-8.**

IMPORTANT: Applicable cycles have been validated to satisfy the requirements outlined below. If cycle parameters (sterilize time, dry time, temperature) other than those listed are required, it is the responsibility of the healthcare facility to consult and follow the device manufacturer's written instructions.

Prevacuum cycles are intended for efficient, high-volume processing of heat- and moisture-stable materials, such as fabrics and wrapped hard goods. This process incorporates a series of vacuum/pressure pulses to condition the load prior to sterilization.



Ready State Screen



Options Screen

Dry Times for Prevacuum and SFPP (see below) are based upon maximum load as follows:

- 26 x 61 x 49" (660 x 1550 x 1245 mm) sterilizer – 15 wrapped instrument trays (25 lb [11 kg]).
- 26 x 61 x 72" (660 x 1550 x 1850 mm) sterilizer – 25 wrapped instrument trays (25 lb [11 kg]).

Actual required dry times may vary depending on load.

Prevacuum Configuration Sterilizers are factory programmed with the following cycles: 270°F (132°C) Prevacuum, Gravity, SFPP, Liquid, 275°F (135°C) Prevacuum and Test Cycles. Prevacuum cycles feature vacuum pulses followed by pressure pulses for **porous load cycles**. See cycle descriptions below for more details:

Default Prevac Cycles

- **270°F (132°C) Prevacuum Cycle:** For efficient, high-volume processing of heat- and moisture-stable materials, such as fabrics and wrapped hard goods. This process incorporates a series of pressure/vacuum pulses to condition the load prior to sterilization.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 4 minutes
  - » Dry time: 30 minutes

- **270°F (132°C) Prevacuum Cycle:** For sterilizing a single fabric pack.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 4 minutes
  - » Dry time: 5 minutes
- **275°F (135°C) Prevacuum Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 275°F (135°C)
  - » Sterilize time: 3 minutes
  - » Dry time: 30 minutes
- **250°F (121°C) Gravity Cycle:** For sterilizing fabric packs.
  - » Sterilize temperature: 250°F (121°C)
  - » Sterilize time: 30 minutes
  - » Dry time: 15 minutes
- **270°F (132°C) Gravity Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 15 minutes
  - » Dry time: 45 minutes
- **250°F (121°C) Gravity Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 250°F (121°C)
  - » Sterilize time: 30 minutes
  - » Dry time: 45 minutes
- **270°F (132°C) Gravity Cycle:** For sterilizing fabric packs.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 25 minutes
  - » Dry time: 15 minutes
- **Liquid Cycle:** This cycle is used for sterilizing liquids in borosilicate containers with vented closures.
  - » Sterilize temperature: 250°F (121°C)
  - » Factory programmed sterilize time: 45 minutes
  - » Dry time: not applicable

IMPORTANT: It is inappropriate for a healthcare facility to sterilize liquids for direct contact with patients.

Steam Flush Pressure Pulse (SFPP) configuration sterilizers are factory programmed with the following cycles: SFPP, Prevacuum, Gravity, Liquid and Test Cycles. See cycle descriptions below for more details:

Default SFPP Cycles

- **270°F (132°C) SFPP Cycle:** For efficient, high-volume processing of double wrapped instrument trays and fabric packs. This process incorporates a series of steam flushes and pressure pulses at pressures above atmospheric levels to condition load prior to sterilization.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 4 minutes
  - » Dry time: 45 minutes
- **275°F (135°C) SFPP Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 275°F (135°C)
  - » Sterilize time: 3 minutes
  - » Dry time: 45 minutes
- **270°F (132°C) SFPP Cycle:** For sterilizing a single fabric pack.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 4 minutes
  - » Dry time: 5 minutes
- **270°F (132°C) Prevacuum Cycle:** For efficient, high-volume processing of heat- and moisture-stable materials, such as fabrics and wrapped hard goods. This process incorporates a series of pressure/vacuum pulses to condition the load prior to sterilization.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 4 minutes
  - » Dry time: 30 minutes
- **275°F (135°C) Prevacuum Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 275°F (135°C)
  - » Sterilize time: 3 minutes
  - » Dry time: 30 minutes
- **250°F (121°C) Gravity Cycle:** For sterilizing fabrics.
  - » Sterilize temperature: 250°F (121°C)
  - » Sterilize time: 30 minutes
  - » Dry time: 15 minutes
- **270°F (132°C) Gravity Cycle:** For sterilizing double-wrapped instrument trays.
  - » Sterilize temperature: 270°F (132°C)
  - » Sterilize time: 15 minutes
  - » Dry time: 45 minutes
- **Liquid Cycle:** This cycle is used for sterilizing liquids in borosilicate containers with vented closures.
  - » Sterilize temperature: 250°F (121°C)
  - » Factory programmed sterilize time: 45 minutes
  - » Dry time: not applicable

IMPORTANT: It is inappropriate for a healthcare facility to sterilize liquids for direct contact with patients.

TESTING CYCLES

- **DART Warm-up Cycle:** This cycle is used to warm chamber to operating temperature prior to performing a DART (Bowie-Dick) Test cycle (or other operating cycles).
- **DART (Bowie-Dick) Test Cycle:** This cycle is used for conducting Bowie-Dick tests. Recommended load is a properly prepared Bowie-Dick test pack. Preprogrammed cycle parameters cannot be adjusted by the user.
  - » Sterilize temperature: 270° (132°C)
  - » Sterilize time: 3 minutes and 30 seconds
  - » Dry time: 1 minute
- **Vacuum Leak Test:** This cycle is used for testing the vacuum integrity of the sterilizer's piping. Sterilizer chamber must be empty while running this test cycle. All timing is preprogrammed and cannot be adjusted.

CONTROL SYSTEM

Design Features

The 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. Sterilization times and temperatures for standard cycles cannot be adjusted below default minimum values. All operator-accessible control functions can be changed using the touch screen control.

IMPORTANT: If cycle parameters (sterilize time, dry time, temperature) other than those listed are required, it is the responsibility of the healthcare facility to consult and follow the device manufacturer's written instructions.

Cycle values and operating features may be adjusted and verified prior to cycle operation. Cycle parameters are retained in control memory for repeated use.

Once cycle is started, cycles and cycle values cannot be changed until cycle is complete. If chamber temperature drops below set point during the exposure phase, the timer is set to stop and automatically reset once normal operating temperature is reached to help assure proper exposure time for the load.

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

Operator interface control panel, consisting of a touch screen, is located on the operating (i.e., load or non-sterile) end of the sterilizer.

The operator interface consists of an **emergency stop button, door control buttons and a touch-sensitive, color display**. The display allows for control communications, graphics and excellent visibility in most environments. The display panel, in conjunction with the control, is used as the monitor for the operator. All sterilizer functions, including cycle initiation and cycle configuration, are operated by pressing the touch-sensitive areas on the display. Display indicates appropriate control buttons, operator prompts and status messages necessary to assist in sterilizer operation. All displayed messages are complete phrases or internationally recognizable graphic icons with no codes to be cross-referenced. Display also indicates any abnormal conditions that may exist either in or out of a cycle. Control buffer memory retains up to ten previously-run cycles for later access.

24-Character ink-on-paper printer, located below touch screen, provides an easy-to-read printed record of all pertinent cycle data on 2.25" (57 mm) wide paper. Data is automatically printed at the beginning and end of each cycle and at transition points during the cycle.Three paper tape rolls and two printer ribbons are furnished with each unit.

Non-operating end (NOE) control panel, 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. Other controls located at the non-operating end include door control pushbuttons, jacket and chamber gauges and an emergency-stop button.

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 Machine Setup menu:

- **Time display and printout units** 24-hour or AM/PM.
- **Audible signals, end-of-cycle signals** and **alarm signals** have three adjustable volume levels available through the control and display panel.
- **Temperature display and printout units** Fahrenheit (°F) or Celsius (°C). Temperature is set, displayed, controlled and printed to the nearest 0.1°. Recalibration is not required when changing temperature units.
- **Pressure/vacuum display and printout units** psig/InHg or bar. Recalibration is not required when changing pressure units.

SAFETY FEATURES

Emergency stop button located on the front panel, below the sterilizer control touch pad. When pressed, immediately shuts off all outputs on the sterilizer. A key is used to reset the switch.

Control lockout switch equipped on chamber door(s), 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.

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

Power door safety switches, located on leading edge of the door, cause pneumatic door movement to stop if door encounters an obstruction during movement.

Stainless-steel door cover panel insulates the operator from the chamber door and end frame, reducing accidental contact with a hot metal surface.

CONSTRUCTION

Shell Assembly

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

The 304 stainless-steel jacket is insulated with1- 1/4" (32mm) of rigid fiberglass insulation with aluminum foil on its outer face. Insulation is fully enclosed by rigid aluminum sheathing.

The steam-supply openings, inside the chamber, are shielded by a full-length baffle to evenly distribute the steam as it enters the chamber.

Chamber Door(s)

The door is constructed of AISI 316L stainless steel and insulated with mineral wool to reduce heat transfer to the stainless-steel door cover.

The door is equipped with a **one-piece, silicone sealing gasket**. The gasket is activated by steam pressure and retracted by pulling a vacuum.

A 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 door-lock cylinder that ensures the door cannot be opened as long as the seal is intact,

energized and more than 2 psig (0.14 bar) 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, consisting of a heat exchanger, converts chamber steam to condensate and disposes condensate to waste. Cooling water flow is regulated by the waste line RTD to minimize water usage and maintain water temperature below 140°F (60°C). Water supply shutoff valve is located in the recessed area of the unit.

Vacuum System

Two-stage 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, 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 (3.4 to 5.5 bar) dynamic. Standard steam piping is constructed of copper and brass and includes a shutoff valve, strainer and a pressure regulator. A stainless steel version of the plumbing stand is also available.

Piping

All piping is located on a modular plumbing rack (stand).

MOUNTING ARRANGEMENT

Sterilizer is arranged for mounting in a pit so that the floor of the chamber is at the same level as the floor of the adjacent work area. This allows a loading cart to be easily moved into and out of the sterilizer. Mount through one partition wall (single door units) or two partition walls (double door units), as specified. Flexible gaskets ensure tight fit of sterilizer panels to wall partition(s) as required. Major panels are stainless steel. Lifting lugs facilitate transporting and positioning sterilizer. Sterilizer is height-adjustable for leveling.

ACCESSORIES

Material Handling Accessories include stainless-steel loading cars with adjustable shelves.

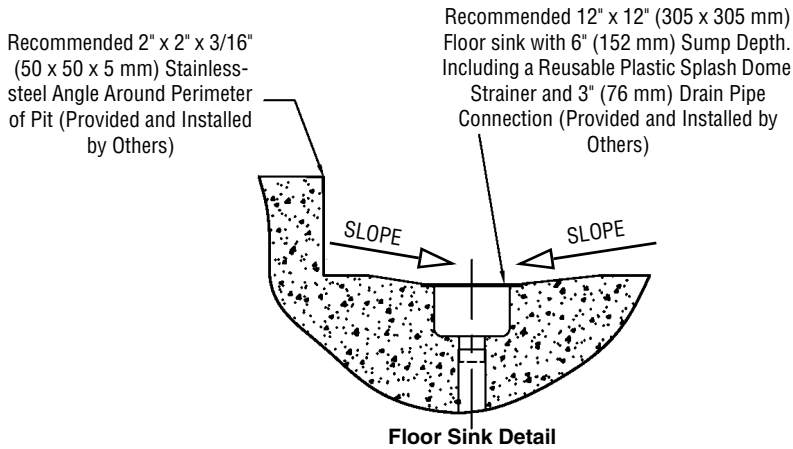
PREVENTIVE MAINTENANCE

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.

NOTES

1. Customer is responsible for backflow protection, if required.
2. Pipe sizes shown indicate terminal outlets only. Building service lines, provided by others, must supply the specified pressures and flow rates.
3. Disconnect switches (with OFF position lockout only; switches not supplied 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. Loading equipment clearance required:
   - For 49" (1245 mm) chamber, one 47" (1194 mm) loading car used,
     77" (1956 mm) clearance required.
   - For 72" (1850 mm) chamber, one 28" (711 mm) and one 41" (1041 mm) loading car used, 71" (1803 mm) clearance required.
7. Floor drain should be provided at location specified on Equipment Drawing.

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



Floor Sink Detail

ENGINEERING DATA / UTILITY REQUIREMENTS

Drain:	2" ODT drain terminal (Floor drain capacity must handle peak water consumption).
Electric Control and Vacuum Pump:	• 208-240 Volt, 3-phase, 50/60 Hz, 12 Amps/phase. 16A circuit breaker recommended, or • 480 Volt, 3-phase, 50/60 Hz, 6 Amps/phase. 8A circuit breaker recommended, or • Outside North America: 400 Volt, 3-phase, 50Hz, 8A circuit breaker recommended.
House Steam:	Size: 3/4" NPT Pressure: 50 to 80 psig (3.4 to 5.5 bar), dynamic, condensate free, and 97% to 100% vapor quality.
Consumption (270°F [132°C] Cycle):	
49" (1245 mm)	• Average: 70 lb/cycle (32 kg/cycle) • Peak: 253 PPH (115 kg/hr)
72" (1850 mm)	• Average: 139 lb/cycle (63 kg/cycle) • Peak: 455 PPH (206 kg/hr)
Feed Water:	Size: 3/4" NPT, Pressure: 20 to 50 psig (1.4 to 3.4 bar), dynamic. Temperature: 59°F (15°C), maximum.
Consumption:	
26 x 61 x 49" (660 x 1550 x 1245 mm)	Peak: 18.5 gpm (70 lpm) / Average: 223 gal/cycle (844 l/cycle).
26 x 61 x 72" (660 x 1550 x 1830 mm)	Peak: 18.4 gpm (69.7 lpm) / Average: 318 gal/cycle (1,204 l/cycle).
Compressed Air (CA):	1/4" NPT 80 - 100 psig (5.5 to 8.3 bar psig), oil free, dehumidified, 3 cfm (5.1 cmh).
Sterilizer Operating Weight:	26 x 61 x 49" (660 x 1550 x 1245 mm) – 6920 lb (3139 kg) 26 x 61 x 72" (660 x 1550 x 1850 mm) – 8812 lb (3997 kg)

Telecommunications Requirements for ProConnect Response Center	• An active wired or wireless TCP/IP network, 10/100BaseT Ethernet connection at each piece of connected equipment, Internet access and an IP address on the facility network.
	• For connection via a separate PC: 5 GB of available hard drive space to run the service agent. Can be installed on:
	  • Dedicated PC running Windows XP with 2.8GHz processor, 512MB of RAM
	  • Virtual Machine
	  • Server
	• Local STERIS login at the PC with a username of STERIS and the password should be ProConnect (STERIS Customer Number).
	• Ethernet cable to connect each piece of STERIS equipment and the dedicated PC to the facility network.

Refer to the Following Equipment Drawings for Installation Details	
Equipment Drawing Number	**Equipment Drawing Title**
62941-091	General Notes – Applicable to Sterilizer Equipment Drawings
129391-136	26 x 61 x 49 Evolution Pit Mounted Floorloader Steam Sterilizer Single L. H. Sliding Door Recessed One Wall Steam Heat
129391-137	26 x 61 x 49 Evolution Pit Mounted Floorloader Steam Sterilizer Double L. H. Sliding Door Recessed Two Walls Steam Heat
129391-138	26 x 61 x 72 Evolution Pit Mounted Floorloader Steam Sterilizer Single L. H. Sliding Door Recessed One Wall Steam Heat
129391-139	26 x 61 x 72 Evolution Pit Mounted Floorloader Steam Sterilizer Double L. H. Sliding Door Recessed Two Walls Steam Heat

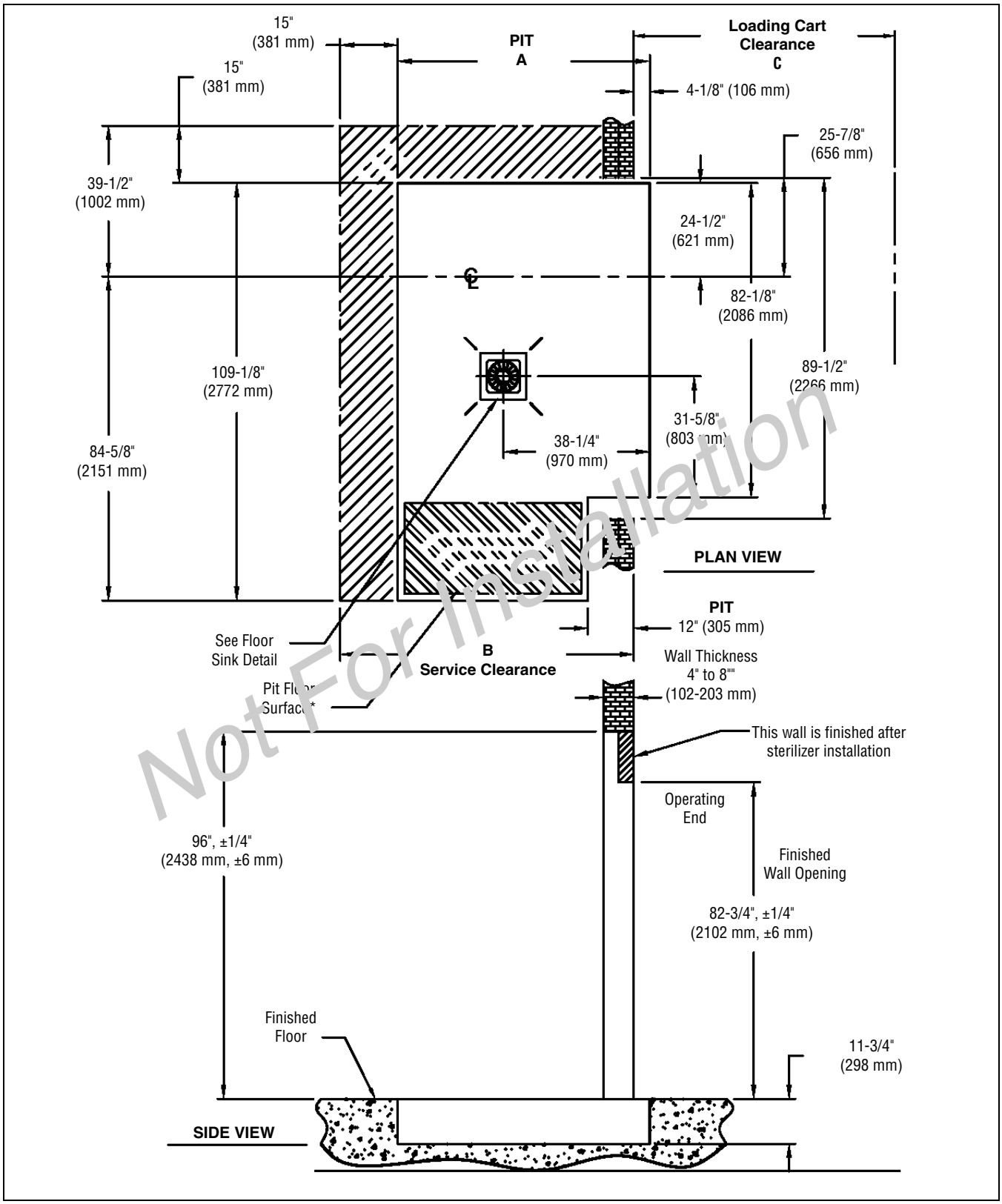


Table 1. 26 x 61" (660 x 1550 mm) Single Door Sterilizer Pit and Service Clearance Dimensions

Dimension	49" Single Door	72" Single Door
A	65-7/8" (1672 mm)	89-1/2" (2272 mm)
B	76-5/8" (1946mm)	100-1/4" (2546)
C	77" (1956 mm)	71" (1803 mm)

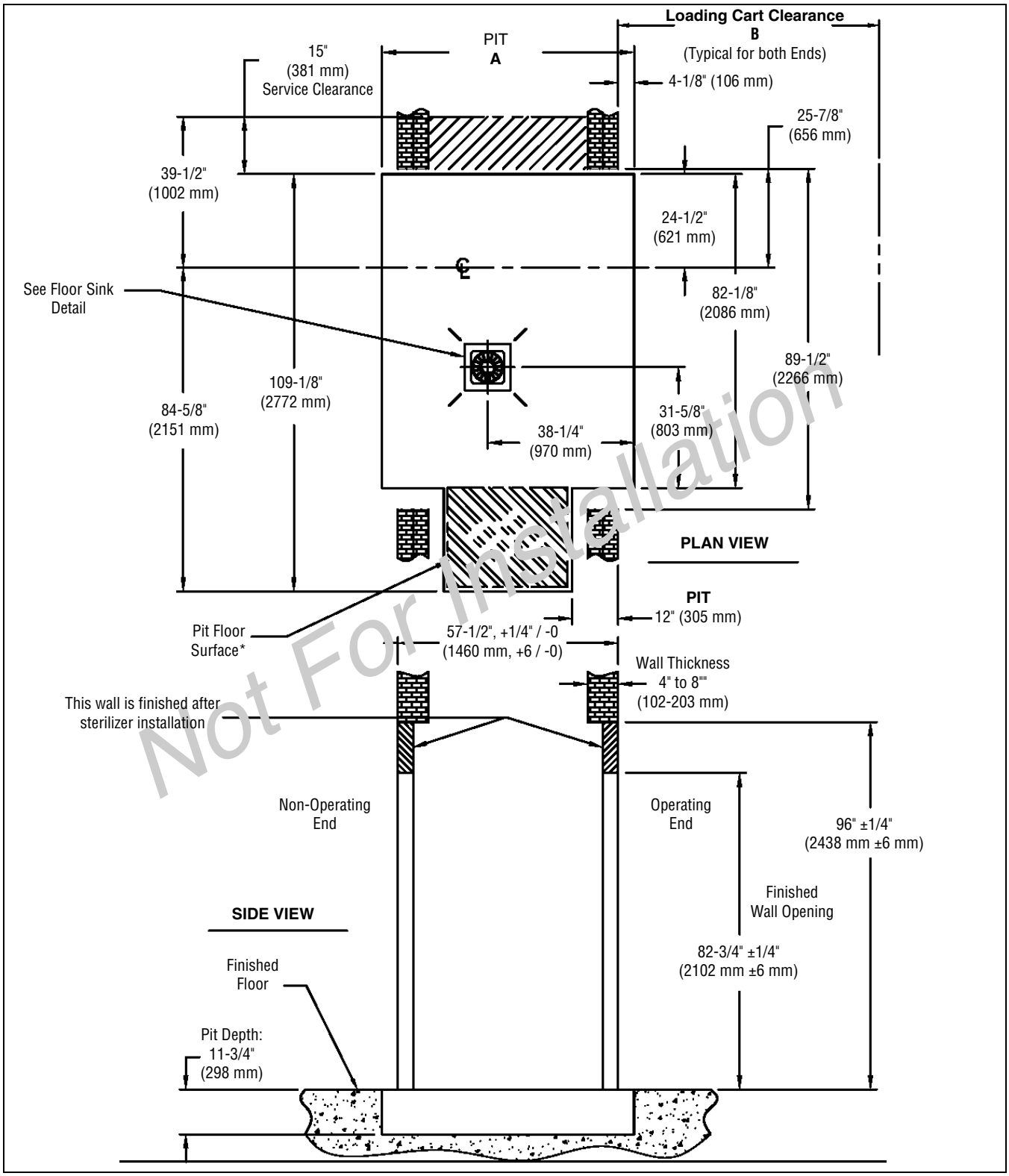


Table 2. 26 x 61" (660 x 1550 mm) Double Door Sterilizer Pit Dimensions

Dimension	49" Double Door	72" Double Door
A	65-7/8" (1672 mm)	89-1/2" (2272 mm)
B	77" (1956 mm)	71" (1803 mm)

For Further Information, contact:

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