



Consolidated Sterilizers

Designed to Transform Your Laboratory

Small Lab Series Steam Sterilizers EZ-Glide™ Series General Specifications

General Specification

Steam Sterilizer, Vertical Sliding Door,
Single Chamber, Double Wall

Consolidated EZ-Glide™ Series Sterilizers are designed to sterilize at temperatures between 212° F and 275° F (100° C and 135° C) through the use of steam. Choose from a stainless steel vessel construction in a variety of programmable control options for pre-vacuum or gravity operation. Consolidated sterilizers offer a range of performance options to meet the most demanding applications in clinical, animal and life science, biotechnology, pharmaceutical, and commercial/industrial applications.

Features and Benefits

Simplified Maintenance, Low Cost of Ownership.

All Consolidated sterilizers are manufactured in the USA and built from commonly available parts to allow quick and cost effective field-level service and maintenance.

Serviceability.

Easy access to replaceable components, local component availability and common electrical and plumbing parts permit qualified facility or area service companies to maintain the sterilizer.

Control Flexibility.

A choice of programmable controllers allows a broad range of performance functions, complete with alarm, monitoring and communications required for internal or third-party compliance.

Performance Cycles—Basic to Advanced.

The fully-jacketed sterilizer design permits vacuum and pressure control when configured for pre-vacuum, post-vacuum, and more sophisticated functions such as air-over-pressure. Consolidated sterilizers are ideal for sterilizing wrapped and unwrapped goods, liquids, waste, and other applications. All cycles are easily managed and documented.



Green and Environmentally Friendly.

Unique, new water-saving technologies reduce water consumption without compromising performance.

Model	Chamber Dimensions (w x h x f-b)	Volume (cu. ft. / liters)	Ship Weight (lbs/kg)	Overall Dimensions (w x h x f-b)
-------	-------------------------------------	------------------------------	--------------------------	-------------------------------------

Sliding Door Model

3AV



3AV	20" x 20" x 38" 50.8 x 50.8 x 96.5 cm	8.8 cu. ft. 249 liters	1,650 lbs 750 kg	39.375" x 71" x 47" 100 x 180.3 x 119.4 cm
-----	--	---------------------------	---------------------	---



Consolidated EZ-Glide™ Series Sterilizers are available in single door models. A versatile control system offers a range of performance options to meet the most demanding applications in clinical, life science, biotechnology, pharmaceutical, and commercial/industrial applications. Model 3AV-ADV-PRO shown with ADV-PRO programmable logic controller.



High Performance Sterilization

Consolidated sterilizers are used in a wide range of applications including clinical, animal and life science, biotechnology, pharmaceutical, and commercial/industrial markets. Consolidated sterilizers are suitable for conventional or pre-vacuum sterilization for quality control, safety and regulatory compliance. In addition, all units can be customized to suit any unique requirements and applications of a particular facility.

Consolidated uses only commonly-available, open-source parts in all phases of sterilizer design and construction, thereby permitting quick, economical and locally-managed service throughout the life of the product. With maximum uptime engineered into the product, Consolidated sterilizers offer a superior return on investment as demonstrated through thousands of installations worldwide.

Sterilization Cycles, Functional Performance

Consolidated sterilizers can be easily configured for numerous cycles and functions. Each cycle is customizable to meet user specific requirements. All cycle parameters are easily viewed prior to and during the cycle run. The following cycles are pre-configured and installed on all gravity and pre-vacuum sterilizers:

Gravity with Post-Vacuum Drying.

Available on gravity and pre-vacuum units. A post-vacuum (or drying) cycle draws a vacuum following sterilization and significantly decreases drying time. This cycle is usually used for wrapped goods, fibers, rubber, bedding and similar loads. The operator may select a sterilization temperature anywhere between 212° F and 275° F (100° C and 135° C), as well as sterilization time and optional vacuum dry time (see Figure 1).

Liquids.

Available on gravity and pre-vacuum units. The liquid cycle prevents boil-over when vented liquids are sterilized. The controller is factory-configured to automatically release steam pressure at an adjustable exhaust rate. The operator may select a sterilization temperature anywhere between 212° F and 275° F (100° C and 135° C), as well as sterilization time (see Figure 2).

In addition to the gravity and liquids cycles, all pre-vacuum sterilizers are preconfigured to also include the following cycle:

Pre-Vacuum.

Available only on pre-vacuum units. This cycle performs a series of steam pulses and vacuum draws prior to sterilization to assure that air has been removed from the load. This also permits the ability to vacuum dry. The number of pulses, pulse steam pressure, vacuum pulse pressure, sterilization time and temperature, and dry time are customizable for each cycle (see Figure 3).

Sterilizer Cycle Selection

Gravity with Post-Vacuum Drying. (Figure 1)

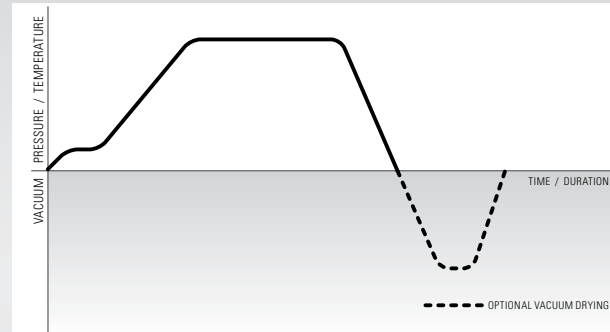
Steam flows through the sterilizer; temperature and pressure ramps slightly to a continuous flow purge.

The controller closes the exhaust valve and interior temperature and pressure ramp up to desired setpoint.

The program maintains dwell until desired time is reached, when pressure is released.

A vacuum system draws the interior atmosphere through ambient to negative pressure, accelerating drying time as programmed.

Once completed the vacuum is released and the load is restored to ambient pressure.



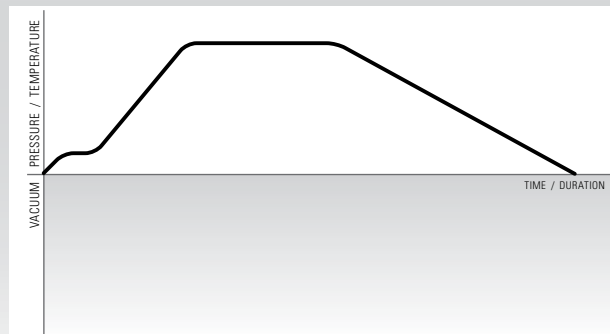
Liquid. (Figure 2)

Steam flows through the sterilizer; temperature and pressure ramps slightly to a continuous flow purge.

The controller closes the exhaust valve and interior temperature and pressure ramp up to desired setpoint.

The program maintains dwell until desired time is reached.

Pressure is gradually released to allow dissolved gases to reach equilibrium to prevent boil-over.



Pre-Vacuum with Post-Vacuum Drying. (Figure 3)

Steam flows through the sterilizer; temperature and pressure ramps slightly to a continuous flow purge.

The controller closes the exhaust valve and interior temperature and pressure ramp to an intermediate setpoint without dwell.

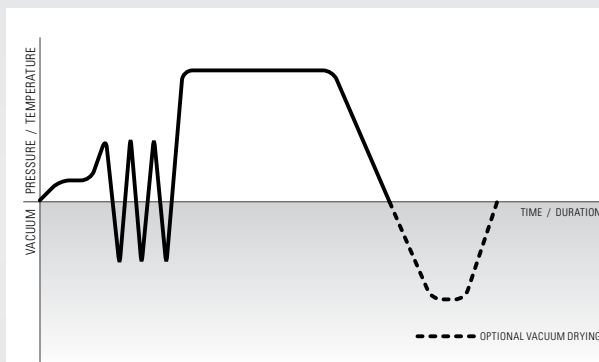
A vacuum system draws the interior atmosphere to negative pressure to remove latent air from concealed pockets within the load.

The process is repeated per program and protocol. Following the final pre-vacuum pulse, the sterilizer ramps to desired setpoint.

The program maintains dwell until desired time is reached, when pressure is released.

If a post-vacuum program is used, a vacuum system draws the interior atmosphere through ambient to negative pressure, accelerating drying time as programmed, after which the vacuum is released and the load is restored to ambient pressure.

If a post-vacuum program is not used, the load is restored to ambient pressure.



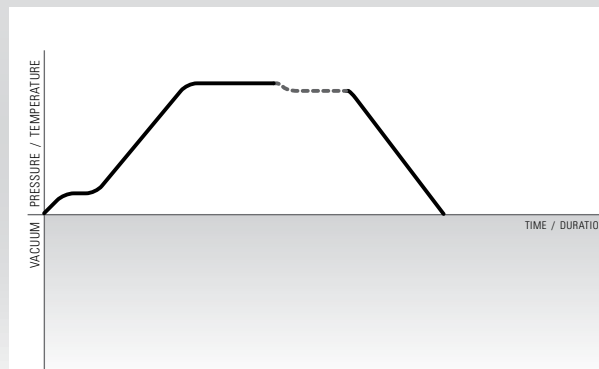
Liquid, Air-Over-Pressure. (Figure 4)

Usually used with smaller amounts of media to prevent liquid loss.

The air-over-pressure function operates identically to the liquid cycle except that pressurized air is injected to cool the load while maintaining pressure to displace steam.

After sterilization, air is injected, pressure is maintained, this prevents boil-over and minimizes evaporation.

Air pressure is then released and the load is restored to ambient pressure.



Additional Sterilization Cycles (available upon request)

Liquids with Load Probe.

Available on gravity and pre-vacuum units. This cycle uses a temperature probe placed within the liquid load to detect, display and print temperature. Applications include sterilization of temperature-sensitive liquids or large volume liquid sterilization (i.e. >2 liter flasks).

Bowie-Dick (Air Removal Test).

Available on pre-vacuum units. This air-removal test cycle validates the vacuum function using ad hoc test packs as per requirements listed in AAMI ST-8.

Vacuum Leak Test.

Available on pre-vacuum units. This cycle provides easy verification of vacuum depth, vacuum seal and chamber piping integrity. Detects leaks greater than 1 mmHg (1 Torr) per minute.

Air-Over-Pressure.

Available on gravity and pre-vacuum units. This cycle uses compressed air to maintain chamber pressure at the sterilization pressure until the liquid has cooled to 212° F (100° C). The rate of exhaust is adjustable. This is useful for small volumes of liquid susceptible to boil-over (see Figure 4).

Low Temperature (Isothermal).

Available on gravity and pre-vacuum units. Typically used for temperature-sensitive goods, this function creates a zero-pressure, temperature only cycle between 190° F and 212° F (88° C and 100° C).

Rapid Cooling.

Available on gravity and pre-vacuum units. Useful for rapidly cooling the liquid media, or any type of load, via an interior water spray mechanism or via a water cooled jacket.

F₀ Cycle.

Available on gravity and pre-vacuum units. Useful for heat-sensitive liquid media.

Pressure Ramping.

Available on gravity and pre-vacuum units. Allows the user to specify a) the amount of time it takes for the load to rise to sterilization temperature/pressure and b) the amount of time it takes to exhaust the sterilizer chamber post-cycle. Ideal for loads that are sensitive to rapid pressure changes.

Compliance and Certifications

Depending on desired application, Consolidated sterilizers can be certified for compliance to the following standards for performance and safety. Selected models qualify as a medical device by the FDA.

- ASME (American Society of Mechanical Engineers): Section VIII, Division I (Unfired Pressure Vessel) code.
- ASME: Section I Code (Power Boilers).
- CRN (Canadian Registration Number): requirements for pressure vessels.
- IEC (International Electrotechnical Commission):
 - EN 61010-1:96—Safety requirements for electrical equipment for measurement, control, and laboratory use.
 - EN 61010-2-041:96—Specific requirements for steam autoclaves.
- UL and cUL (Underwriters Laboratory): Standard 61010-1 and 61010-2.
- US NEC (National Electrical Code) and National Plumbing Code.
- EN ISO 111345-R-8/93—AAMI (Association for the Advancement of Medical Instrumentation) Industry Standard for Moist Heat Sterilization.
- 21 CFR Part 11 (US Code of Federal Regulations, Section 21—Food and Drugs; Electronic Records; Electronic Signatures).
- ANSI/AAMI ST-8: Hospital Steam Sterilizers.

Heavy-Duty Construction

Sterilizer Chamber.

Consolidated steam sterilizer vessels are manufactured with an inner chamber and a full outer jacket. The inner chambers are available in Type 316L stainless steel construction. Jacket construction is available in either carbon steel, Type 304L stainless steel or Type 316L stainless steel. Material selection is directly related to the chemical properties of available water supply and intended application. Pressure vessels are welded in compliance with ASME Section VIII, Division I.

EZ-Glide™ Sliding Door.

- The EZ-Glide™ sliding door steam sterilizer simplifies chamber access with a sliding counterbalanced door that seals safely against an air actuated non-stick gasket. The non-stick air activated gasket design provides a longer service life than a conventional steam-actuated gasket.
- The gasket is recessed into a precision-machined slot and will maintain a secure seal even in the event of a total utility loss. The gasket is easy to replace and does not require special tools or lubrication.
- The door sealing mechanism includes redundancy for added security; a safety lock prevents the door from opening if the chamber is under pressure.
- Ergonomic benefits include a wide-grip handle and smooth, vertical open/close action on a counterbalanced assembly that is easy-to-operate with one-hand access.

Chamber Door and Gasket System.

Consolidated's sterilizer doors are designed with redundant, and independent mechanical and software features to ensure maximum safety. Door design specifications meet all ASME code requirements.

- Door engagement is clearly visible to confirm closure.
- An electrical door switch ensures that the door is fully closed and locked prior to the start of the cycle. If the signal is lost during a sterilizing cycle, the cycle is automatically aborted.
- The door is mechanically locked during a cycle to prevent inadvertent opening.

Components.

- Piping, fittings, and valves are available in stainless steel or brass/bronze. All parts and components subject to repair are publicly available (i.e. non-proprietary) from open market sources, including controls, valves and fittings.
- Safety relief valves and drains are integral to the plumbing configuration.
- Baffled steam inlets minimize direct condensate on the load, reduce load wetting, and help assure proper steam uniformity within the chamber.
- Cabinet insulation retains heat and minimizes heat loss (see Table 1) to the room. The sterilizer jacket and all steam service piping include a minimum 1" fiberglass-based insulation.
- An integral wastewater cooling function reduces discharge temperature to the drain to less than 140° F (60° C).
- One style solenoid valve used throughout the sterilizer simplifies maintenance. Non-proprietary valve reduces cost.
- On units equipped with steam generators, an ASME CSD-1 pressure switch is included to back up the safety relief valve by automatically shutting down the steam generator if an overpressure condition exists.
- Easy-to-read and calibrate pressure gauges ensure simple and safe operation.
- Other components required for the intended application may include a steam generator, vacuum pump, etc. depending on the options chosen.

Air Removal

Depending on the application and required cycle, air removal may be achieved by gravity displacement or mechanical assistance through vacuum for pre- and post-cycle use as required.

- For gravity air removal, the control system automatically opens and closes valves on demand.
- For pre-cycle vacuum, Consolidated offers a choice of a water-ejector vacuum system, or a water-minimizing liquid ring vacuum pump.
- For post-cycle vacuum where drying assistance is desired, the sterilizer can use a water-ejector vacuum system, that utilizes the sterilizer water supply, or a water-minimizing liquid ring vacuum pump.
- Following completion of the post-vacuum function and throughout return to ambient pressure equilibrium, the returning air is filtered through a 0.3 micron bacteria-retentive filter.



- A. Hinged front panels for easy access
- B. EZ-Glide™ vertical sliding door
- C. ProGEN™ electric steam generator (optional)
- D. Advantage Series™ control column

Model 3AV (Front View) Service access panels on left- and right-hand hinges place all interior components and plumbing within easy reach and front access. Controls, printers, communications, electrical, mechanical and plumbing circuits are positioned for proactive maintenance.

Steam Sources

Consolidated sterilizers can operate on house steam or steam produced by integral or remote steam generators. Incoming water quality is always a primary consideration in selection of a steam generator (see Table 4).

Selection of the steam source is based on facility steam availability and other factors associated with sterilizer use and throughput.

House Steam Option.

In most situations standard house steam, when available is adequate. An inlet filter may be required to clean the steam prior to injection into the sterilizer plumbing system.

ProGEN™ Steam Generator.

When house steam is not available or inadequate, the Consolidated ProGEN™ electric steam generator serves as the steam source. Developed to fit directly below the sterilizer chamber within the chassis, the ProGEN™ is designed to deliver a high rate of steam to the chamber without lag time between cycles. This increased steam capacity accelerates recovery and achieves cycle setpoints more quickly to yield the most efficient turn-around time possible.

The ProGEN™ includes front-access to open-source heating elements for quick replacement over the life of the sterilizer, as well as:

- Larger than normal steam capacity, resulting in faster up-time.
- Large service opening for easy generator maintenance and inspection.
- Whisper-quiet automatic feed water pump, pressure regulator and electronic water level control.
- Standard voltages 208, 240, 380, 480 in single phase or three phase.
- Capacities from 20 kW to 45 kW.
- Optional automatic blowdown.
- Available for retrofit to existing sterilizer systems.

Steam-to-Steam Generator.

A steam-to-steam generator offers another steam option to deliver clean steam to the chamber. Contact Consolidated for details and ordering information.

Generator Blowdown Option.

In facilities where water quality is poor, a generator blowdown function is required to flush impurities from the system and prevent collection of contaminants on the heating elements. The blowdown function can be initiated manually or ordered as an automatic blowdown function if desired.

Sterilizer Installation

Consolidated sterilizers are available for installation as floor-standing cabinet-enclosed units with a stainless-steel superstructure to conceal plumbing and wiring. These sterilizers are also available for installation as recessed in one or two walls. Hook-ups for utility connections can be located anywhere on the unit as required, however house connections must be within 5 feet of the unit unless otherwise specified prior to installation.

Consolidated Sterilizer Systems Controller Options—The Advantage Series™ Programmable Logic Controllers

Catalog Number	ADV-PRO™	ADV-PLUS™	ADV-PB™
Description	Color Touchscreen Display	Monochrome Touchscreen Display	Monochrome Touchscreen Display w/ Push Buttons

Operator Interfaces

Display	6" 18 bit color	10" 18 bit color	6" Monochrome	3" Monochrome
Resolution	320 x 240 pixels	640 x 480 pixels	320 x 240 pixels	128 x 64 pixels
Mounting Options	Swing-Arm, Front and Remote Panel		Front and Remote Panel	Front and Remote Panel
Chamber Process Gauges	Pressure (psig, kg/cm ²) Vacuum (inHg, mmHg)		Pressure (psig, kg/cm ²) Vacuum (inHg, mmHg)	Pressure (psig, kg/cm ²) Vacuum (inHg, mmHg)

Industry Standard and Custom Sterilizer Cycles

Gravity	Yes	Yes	Yes
Liquids w/Auto Jacket Blowdown	Yes	Yes	Yes
Liquids w/Controlling Load Probe	Optional	Optional	
Pre-Vacuum	Optional	Optional	
Post-Vacuum	Optional	Optional	Optional
Low Temperature (Isothermal)	Optional	Optional	
Bowie-Dick (Air Removal Test)	Optional	Optional	
Vacuum Leak Test	Optional	Optional	
Air-Over-Pressure	Optional		
Effluent Decontamination	Optional		
F ₀ w/Controlling Load Probe	Optional		
Total Programmable Cycles	Up to 22	Up to 12	2

Green Features

Energy Saver Calendar for Scheduled ON/OFF Steam Supply	Standard	Standard	
WaterEco™ System for Reduced Water Consumption	Optional	Optional	Optional

Sterilizer Control and Process Integrity

Configurable Cycle Parameters	Standard	Standard	Standard
Improper Parameter Rejection	Standard	Standard	Standard
Multi-layered Password Security for Configuration Protection	Standard	Standard	
Two-Point Calibration of Sensors	Standard	Standard	Standard
Automatic Condensate Exhaust Management for all Cycles	Standard	Standard	Standard
Memory Backup of Configuration	Standard	Standard	Standard

Sterilizer Cycle Quality Reporting

Graphic Display of Cycle Progress	Standard	Standard	Standard
Thermal Printer (48 characters/line)	Standard	Optional	
Impact Printer (48 characters/line)	Optional	Standard	Standard

Printed Documentation of Sterilizer Cycles

User Defined Cycle Name	Yes		
Start Time and Date	Yes	Yes	Yes
Cycle Type	Yes	Yes	Yes
Chamber Temperature/Pressures	Yes	Yes	Temperature Only
Cycle Summary	Yes	Yes	Yes

Audible Alarms (also displayed on touchscreen)

Cycle Completed, Recycle, Over Temperature, Over Pressure, Time Limit, Chamber Drain, Jacket/Chamber Flow Failure	Standard	Standard	Standard
---	----------	----------	----------

SteriNET® Remote Monitoring, Troubleshooting, Supervisory Control and Data Acquisition

SteriNET® Connex	Optional	Optional	Optional
SteriNET® Apps	Optional	Optional	Optional
SteriNET® Dataport	Standard Ethernet, Optional RS-232 or RS-485	Standard Ethernet, Optional RS-232 or RS-485	
SteriNET® SCADA	Optional		

¹ Optional audible warning buzzer available; contact Sales for information.

For information about controllers required for FDA applications contact Consolidated Sterilizers direct.

Control and Monitoring System

Consolidated offers a variety of control system options for programmed, automatic and semi-automatic operation. Controllers are built from industry standard, open source components for international availability of parts and service. Consolidated's Advantage Series™ controllers offer proven reliability. Controllers are based on the Allen-Bradley® PLC platform specifically programmed for Consolidated sterilizers, complete with intuitive touchscreen displays and real-time operating systems (see chart on page 6).

- Permits industry standard and custom sterilizer cycles.
- Simplifies operation with intuitive operator interfaces.
- Assures quality control and process integrity.
- Features sterilizer cycle quality reporting and printed documentation.
- Audible and visual alarms warn of cycle or other deviations.

Printer.

An impact printer or thermal printer can be integrated into the main control panel. Printout includes all important information regarding the sterilization cycle recorded at user-defined intervals. Information includes: operator identification code, cycle type, cycle stage, time, chamber and jacket pressure and/or temperature, alarms or messages and cycle completion status.

Alarms.

Detailed performance and function alarms are based on the control system selection. Regardless of control system used, however, standard safety alarms are included in all Consolidated sterilizers.

Cycle Safeguards.

Depending on the controller selected, a range of cycle safeguards helps assure safe operation.

- No cycle can start unless the door is properly closed and locked.
- Control inputs automatically reject incorrect cycle parameters.
- Chamber gauges are installed on the operating end of the sterilizer to display pressure in psig and vacuum in inches-Hg.
- Exhaust is automatically condensed and cooled to a safe drainage temperature.
- Manual adjustment of condensing water flow offers economy in water consumption (see Table 2) and lower operating costs.

Calibration.

Sterilizers can be calibrated by a two-point software method on all sensor circuits. In this process, atmospheric transducer readings will be acquired and chamber transducers are offset at an equal level.

Options and Accessories

Consolidated offers a range of options and accessories to optimize and customize your sterilizer, to meet requirements for internal or third-party compliance, and to improve workflow. Some options are factory installed and must be specified when ordering. Contact Consolidated for detailed information on any of the following:

Steam Generator.

For installations where house steam is not available, a variety of integral or remote mounted steam generators is available. Consolidated will assist with selection according to site preparation requirements. Generators are available in electric, gas or steam-powered configurations. Integral generators are factory installed and must be specified when ordering.

Automatic Generator Blowdown.

Recommended to remove accumulated impurities from the steam generator when used with low quality incoming water. Factory installed. Specify when ordering.

Steam Inlet Filter.

Recommended to clean dirty steam from facility steam sources. Specify when ordering.

Shelving.

Shelves, carts and other accessories are available to suit specific applications. Shelves and racks are constructed of electro-polished Type 316L stainless steel. Interior shelving options include:

- Standard: One (1) stationary full-length wire-grid bottom shelf and one (1) upper stationary shelf suspended in the middle of the chamber on shelf brackets.
- Option 1: One (1) stationary full-length wire-grid bottom shelf and one (1) upper extendable shelf suspended in the middle of the chamber on shelf brackets.
- Option 2: One (1) stationary full-length wire-grid bottom shelf and two (2) upper extendable shelves suspended in the middle of the chamber on shelf brackets.
- Option 3: A loading cart, mounted on rollers, with two stainless steel shelves and a wheeled transfer carriage. The transfer carriage mates to interior guide rails to ease loading and unloading of sterilization loads up to 500 lbs evenly distributed.





SteriNET® Remote Monitoring, Troubleshooting, Data Acquisition.

Choose from four SteriNET® options: Connex, Apps, Dataport, and SCADA. SteriNET® Connex permits Consolidated engineers to provide quick, accurate and economical offsite diagnosis of operation problems through a standard phone line or Ethernet connection. This option is ideal for facilities located in remote areas where service assistance is hours or days away. This option includes one year of free, remote-transmitted software upgrades from the Consolidated technical support center. SteriNET® Apps allows for remote monitoring through a hand-held device like an iPhone or iPad. SteriNET® DataPort allows the user to record time, temperature, and pressure data from the sterilizer in real time, with the proper data-acquisition software package. SteriNET® SCADA maximizes the usefulness of monitoring, logging, and controlling one or multiple sterilizers from a central location in your facility. The SCADA System allows for uniform operator interface across multiple platforms, including Microsoft Windows® CE, Microsoft Windows XP®, and Vista®. Specify when ordering.

RS-232 Port.

Connects the control system to data logging/monitoring equipment. Factory installed. Specify when ordering.

RS-485 Port.

Connects the control system to data logging/monitoring equipment. Factory installed. Specify when ordering.

Steril-Q™ Validation Services & Documentation.

Protocols and templates are available for Factory Acceptance Testing (FAT), Installation Qualification (IQ), Operation Qualification (OQ), and Performance Qualification (PQ) in accordance with 21 CFR (US Code of Federal Regulations, Section 21—Food and Drugs) Part 11. Specify when ordering.

Validation Port.

Required for insertion of thermocouple(s) to chamber interior for temperature profiling and validation. Ports are located on the left side of the chamber and range from ½" to 2" diameter. Specify when ordering.

Load Probe, Controlling.

Includes a temperature probe with lead wire permitting placement in the load to be sterilized such as liquid, red-bag or other. Sterilization cycle time is based on load temperature instead of chamber temperature. Factory installed. Specify when ordering.

Load Probe, Non-Controlling.

Includes a temperature probe with lead wire permitting placement in the load to be sterilized such as liquid, red-bag or other. User can monitor the temperature of the load during a cycle. Factory installed. Specify when ordering.

Temperature Probe Sealing Gland.

Multi-port gland permits safe installation of thermocouples or other probes inside the chamber. Factory installed. Specify desired quantity and location when ordering.

Automatic Jacket Blowdown.

Recommended for liquid cycles. This option is used to exhaust steam in the chamber as well as the jacket to prevent liquid loads from boiling over. Factory installed. Must be specified when ordering.

Multi-Rate Liquid Exhaust.

Prevents boil-over of liquids by optimizing exhaust rate and reducing total cycle time. User selects an exhaust rate above and below an adjustable temperature set-point. Standard feature and available only on ADV-PRO control systems.

Low-Temp Control.

Often referenced as an “isothermal” or “inspiration” cycle, a low temperature control is recommended when sterilizing heat-sensitive loads. In this application the sterilizer operates at a relatively low temperature and pressure. Factory installed. Specify when ordering.

Uninterruptible Power Supply (UPS).

Allows the control system to remain on in the event of a brief power loss or brownout. Specify when ordering.

Vermin Seal.

The vermin seal is welded to the periphery of the sterilizer before recessing to prevent rodents from compromising the installation. Factory installed. Specify when ordering.

Effluent Decontamination Control.

Exclusively from Consolidated, this effluent decontamination system traps bacteria within the autoclave chamber and sterilizes it prior to release into the drain (Consolidated Patented Process). Any liquid effluent is held in the chamber for the duration of the sterilization cycle. All aerosol effluent passes through a 0.2 micron hydrophobic HEPA filter with >99.999% efficiency. The steam that sterilizes the products in the chamber also sterilizes the bacteria held by the filter. Filters are easily changed after use. Factory installed. Specify when ordering.

Seismic Mounting Brackets.

Required to meet certain local codes in seismically active areas. Contact your facility manager for information. Factory installed. Specify when ordering.

Sump Pump.

Required when gravity drain is not available. Provides positive pump to remove condensate effluent to hard-plumbed drain. Specify when ordering.

Form C Dry Contacts.

Choose from 0–5V, DC or 4–20 mA output. Offers direct connection to building monitoring system. Specify desired outputs when ordering.

Flood Switch.

In the event of excessive liquid in the chamber or jacket, an alarm will sound and a message will be displayed warning the user about the flood condition. Factory installed. Specify when ordering.

Chamber Finish.

- High polish (mirror finish), less than 10Ra.
- Electropolish.

Specify when ordering.

Stainless Steel Piping.

- Full—Type 316 stainless steel for all wetted piping.
- Partial—Type 316 stainless steel for wetted components from the steam generator to chamber inlet only.

Specify when ordering.

RO/DI Water Purification System.

A high-purity water system is available for facilities that do not meet the minimum water purity requirements (see Table 4). A continuous flow reverse osmosis (RO) water filtration system designed to pre-treat water to the autoclave or for general laboratory use can be supplied. Contact Consolidated for information.

WaterEco™ Water Saving Systems

The Consolidated WaterEco™ Water Saving Systems reduce water consumption to the autoclave by up to 99%. Factory or field installed. Available on gravity and pre-vacuum units in the following configurations:

- **WaterEco™ Gravity Basic:** Reduces cooling water by up to 90% without the use of electricity.
- **WaterEco™ Gravity Plus:** Choose this feature if facility chilled-water circulation system is readily available. This option reduces cooling water usage by up to 99%.
- **WaterEco™ Vacuum Basic:** Steam sterilizer vacuum systems require a relatively high flow of cold water to function properly. This option reduces vacuum and cooling water consumption up to 50% on pre-vacuum sterilizers.
- **WaterEco™ Vacuum Plus:** Choose this feature if facility chilled-water circulation system is readily available. The full recovery system reduces waste water from the vacuum system by up to 99%.

SterilCARE™.

The SterilCARE™ *Proactive Maintenance Program (PMP)* is designed to help keep your autoclave running at top performance for many years. Choose from several SterilCARE™ plans, or contact us to arrange for a custom configured maintenance program.

Water Quality Compatibility, Stainless Steel vs. Non-Stainless Selection

Materials that contact the water supply to the sterilizer, including the steam generator, water-cooled devices, water-actuated accessories, valves and piping must be compatible with the purity of the water.

- If deionized or distilled water or water with a purity greater than 1 MΩ/cm is supplied, then all such points of contact must be of stainless steel construction.
- If softened water, water purified by reverse osmosis or tap water with purity of less than 1 MΩ/cm is supplied, then such points of contact must be of carbon steel, bronze or brass construction, as appropriate.

Site Preparation and Utilities

Utilities of ample capacity required for operation of the sterilizer shall be provided at the place of installation at the facility. Key considerations include electric power availability, steam source, water type and flow capacity, and compressed air. For information on required utilities and locations refer to the sterilizer architectural drawing.

- Effluent drain and exhaust considerations include wastewater and the facility air exhaust system.
- Clearances include door and cart allowances, recommended 18–24" for access to plumbing, adequate load-bearing capacity of floor at installation site, and biointegrity.
- Contact Consolidated or your Consolidated sales representative for planning and selection assistance.

Installation Options

Consolidated offers a choice of installation options to accommodate the facility schedule. In general, Consolidated can arrange for any of the following installation preferences:

- Consolidated turn-key installation, complete.
- Consolidated on-site supervision of facility designated labor.
- Inside delivery is available, with an additional option of removal of shipping and crating materials. Contact Consolidated for details.

Typical Utility Requirements

General.

- Steam (S): ¾" NPT, 50-80 psi dynamic.
- Electrical (E1): 110V, AC or 220V, AC, 1-phase, 15 amps—dedicated and isolated.
- Air (A): ¼" NPT, 45-80 psi dynamic (if available).
- Water (W2): ½" NPT, 45 psi dynamic minimum.
- Drain (D1): open drain to funnel connection in floor, diameter 2½" minimum.
- Backflow preventer not provided (unless specified).
- Economy, Post-Vac (W3): ½" NPT, 45 psi dynamic minimum.
- SteriNET®: Ethernet or analog phone line.

Optional Vacuum Systems (maximum one per unit).

- Hi-Vacuum with Water Ejector (W3): 1¼" NPT, 45 psi dynamic minimum.
- Hi-Vacuum with Vacuum Pump (W3, E3): ½" NPT, 45 psi dynamic minimum.

Electric Steam Generator Utilities:

- Power Supply (E2): available in 208/240/380/480V, single or three phase.
- Generator Feedwater (W1): treated water, ½" NPT, 45 psi dynamic minimum.
- Drain (D2): ¾" NPT.

Table 1. Comparative Heat Loss (Per Chamber)

Model	Chamber Dimensions (w x h x f-b)	Heat Source Options	Maximum Operating Weight (lbs) ¹	Peak Heat Loss (BTU/hr at 70° F (21° C))		
				Cabinet	Recessed	
				To Room	Front of Wall	Back of Wall
3AV	20" x 20" x 38" 50.8 x 50.8 x 96.5 cm	Steam	1,800	7,000	2,500	4,500
		Electric	1,975	8,750	3,300	5,450

¹ Assuming chamber fully loaded with flasks filled 25% with water.

Table 2. Water Consumption (Per Chamber)

Model	Chamber Dimensions (w x h x f-b)	Air Removal Method	Water Consumption							
			Cold Water					Treated		
			Peak (gpm)	Per Cycle ² (gal/cycle)	Per Cycle with WaterEco™ ² Gravity Basic (gal/cycle)	Idle (gph)	Idle with WaterEco™ Gravity Basic (gph)	Peak (gpm)	Per Cycle ² (gal/cycle)	Idle (gph)
3AV	20" x 20" x 38" 50.8 x 50.8 x 96.5 cm	Gravity	6	15	1	7	1	1	4	1
		Ejector	6	145	130	7	1	1	4	1
		Vacuum	6	45	30	7	1	1	4	1

² Assuming 30 minute sterilizing time at 250° F (121° C) and 20 minute drying time.

Table 3. Power and Steam Usage

Model	Chamber Dimensions (w x h x f-b)	Air Removal Method	Electrically Heated				Steam Heated			
			Generator Size (kW)	Generator Current (amps) ²			Steam Consumption			
				208V	240V	380V	480V	Peak (lb/hr)	Per Cycle ¹ (lb/cycle)	Idle (lb/hr)
3AV	20" x 20" x 38" 50.8 x 50.8 x 96.5 cm	Gravity	25	69	60	37	30	180	20	7
		Vacuum	25	69	60	37	30	180	35	7

¹ Assuming 30 minute sterilizing time at 250° F (121° C) and 20 minute drying time.

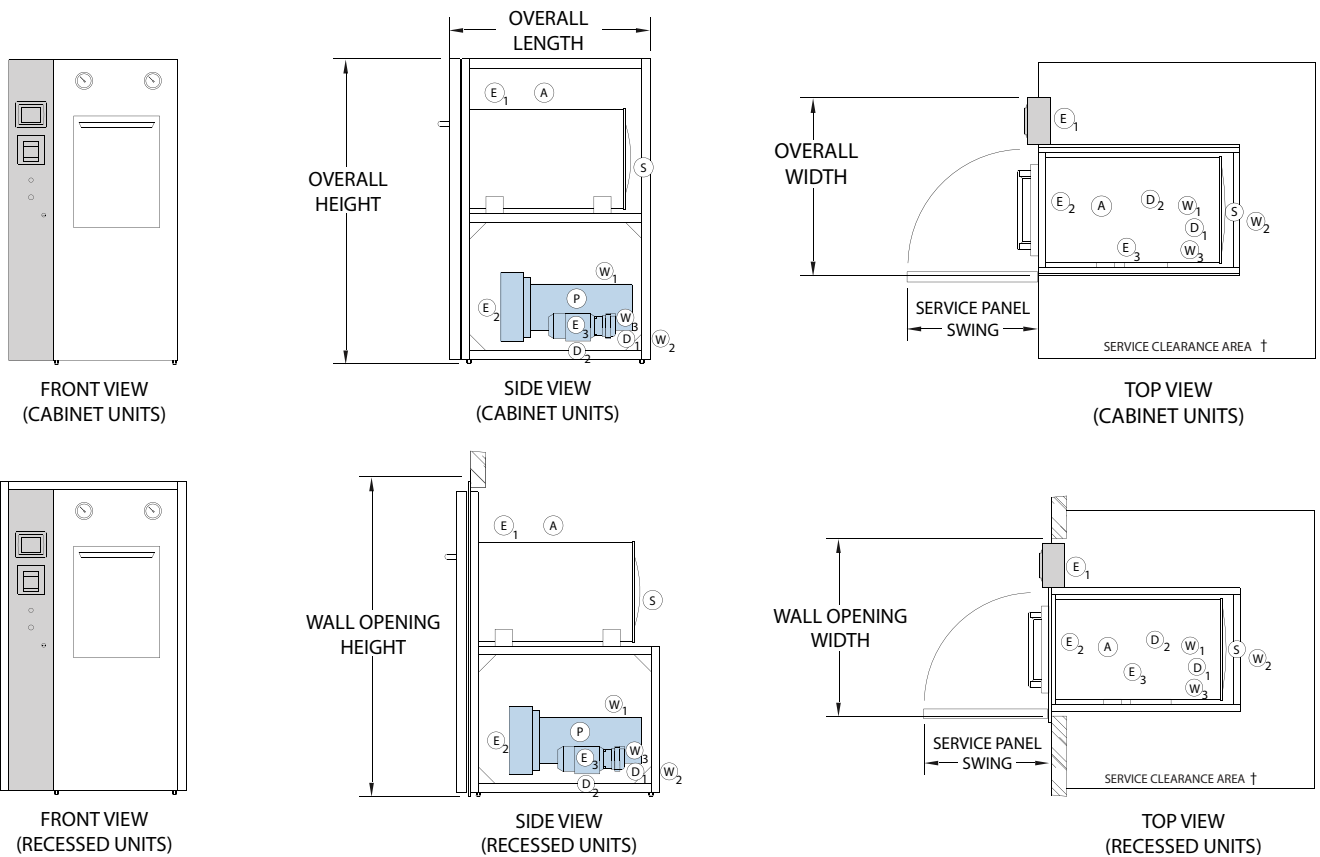
² Current drawn by generator. Local codes and regulations may affect breaker size.

Table 4. Water Feed Requirements, Carbon-Steel Steam Generators³

Characteristic	Recommended Condition	Maximum Condition
Temperature	As Supplied	140° F (60° C)
Total Hardness	0–17 mg/L	85 mg/L
Alkalinity	50–180 mg/L	350 mg/L
Total Dissolved Solids	0–150 mg/L	250 mg/L
pH	7.5–8.5	7.5–9.0
Total Silica	0.1–1.0 mg/L	2.5 mg/L
Resistivity	2,000–6,000 ohms/cm	26,000 ohms/cm ⁴

³ Stainless-steel generators require deionized water >1 MΩ/cm.

⁴ If water supplied is greater than 26,000 Ω/cm contact Consolidated for recommendation.



E Electrical
 D Drain
 W Water
 S Steam
 A Air (if applicable)
 P ProGEN™ Steam Generator

† Recommended service clearance is 18-24" both sides and back. If necessary, service clearance can be decreased or adjusted to one side to accommodate facility specific space constraints.

Notes

- Left side control housing (gray shaded area above), right side hinged front-panel shown. Standard control location is opposite hinge. Opposite mounting is available upon request.
- The control housing is shipped detached from the sterilizer to allow passing through doorways, reducing overall pre-installation width by 10.375". When the sterilizer is installed, the control housing and electrical connections are easily attached.
- Alternative controller mounting options are available at no charge for installations into smaller wall openings. Contact Consolidated to arrange a solution.
- Standard plumbing and utility access is primarily located on the same side as the door hinge. If location of plumbing is important to your installation contact Consolidated to arrange a solution.

Table 5.

Model	3AV
Chamber Dimensions (w x h x f-b)	20" x 20" x 38" 50.8 x 50.8 x 96.5 cm
Volume (cu. ft.)	8.8 cu. ft. 249 liters
Overall Width (inches)	39.375" 100 cm
Overall Height (inches)	71" 180.3 cm
Overall Length (inches)	47" 119.4 cm
Wall Opening Width (inches)*	41.375" 105.1 cm
Wall Opening Height (inches)	72" 182.9 cm
Service Panel Swing (inches)	29" 73.7 cm

* Alternative controller mounting options are available at no charge for installations into smaller wall openings. Contact Consolidated or your Consolidated Sales Representative to arrange a solution.



**CONSOLIDATED
STERILIZER SYSTEMS**

**P.O. BOX 297 | 76 ASHFORD STREET | BOSTON, MA 02134-0003
P: 617.782.6072 | F: 617.787.5865 | CONSTERIL.COM | SALES@CONSTERIL.COM**