

INTEGRITY™ STEAM STERILIZER

INTRODUCTION

The SKYTRON **Integrity 175** and **Integrity 175SG** sterilizers utilize gravity displacement and pressure/vacuum pulse cycles for sterilization. Each **Integrity** sterilizer is equipped with prevacuum, gravity, immediate use and express prevacuum cycles together with leak test, self-diagnostic cycle test, warm up and Bowie-Dick test cycles. Liquid cycles are available as an option. The **Integrity Series** sterilizers are equipped with 12 factory programmed cycles and 12 fully customizable cycles which can be added, modified and renamed with password access. All sterilization parameters are monitored for deviation of temperature, pressure and time by the control system.

APPLICATION

The SKYTRON **Integrity 175** and **Integrity 175SG** sterilizers incorporate high-pressure steam to sterilize heat and moisture stable devices and materials used in the health care industry. Various sterilization cycles are capable of processing non-porous and porous items wrapped or unwrapped, including towel, gown or other linen packs. Optional liquid cycles are capable of sterilizing liquids in borosilicate containers with vented closures.



Order Configurations						
	Door Type	Heating	Control Power	Voltage (Opt)	Mounting	Equipment #
Integrity™ 175	Single	House Steam	120V, 60Hz, 10A	NA	Recessed	ASSV-AH06-120R
					Freestanding	ASSV-AH06-120F
Steam Generator		208V, 3pH, 60Hz, 50A		Recessed	ASSV-AH06-208R	
				Freestanding	ASSV-AH06-208F	
		480V, 3pH, 60Hz, 22A		Recessed	ASSV-AH06-480R	
				Freestanding	ASSV-AH06-480F	

FEATURES

Spacious 17½" x 17½" x 26½" (445 mm x 445 mm x 675 mm) sterilization chamber designed to accommodate a wide range of trays, containers, packs and devices of various sizes.

Standard water recirculation system is equipped on all *Integrity Series* sterilizers within the installation footprint. The integrated water recirculation system drastically reduces the amount of water consumed per cycle up to 64% compared to existing units without affecting cycle times. Additional water conservation can be achieved by lengthening overall cycle times.

The SKYTRON *Integrity 175* and *Integrity 175SG* have been validated to process up to two (2), 25 pound (11.36 kg) instrument trays. Please see section entitled Processing Cycles for specific load recommendations for each cycle.

The *Integrity 175* and *Integrity 175SG* have been validated to process a maximum of three (3) lumen instruments per cycle load, with a 2 mm inside diameter (minimum) and 400 mm long (maximum). (Immediate Use 2, Prevacuum 270, Prevacuum 275, and Express Prevacuum cycles only) (3 mm inside diameters lumens may be processed according to current ANSI/AAMI ST8:2008).

5.7" (145 mm) touch panel screen displays easy to use operator controls, operating conditions, service interface panel and troubleshooting information.

Standard vertical sliding power door can be operated from the touch screen control display or a standard, recessed foot pedal control. The use of an electric motor allows the door operation to remain fast, reliable and quiet.

Standard electronic cycle data recording to CF card in addition to traditional ink-to-paper printed receipt.

Steam actuated door gasket reduces the potential for incoming air to the chamber.

Bürkert Solenoid Valves with LED indicators are used to assist with service troubleshooting and eliminate the need for compressed air.

The *Integrity 175* and *Integrity 175SG* feature dual walled, fully jacketed, all welded rectangular chambers to reduce the potential for cool spots inside the chamber compared to partially jacketed sterilizers.

12 open cycle slots to easily create custom sterilization cycles.

12 factory programmed cycles are capable of modification with password access.

Password protected access to supervisor and service modes.

Auto run timer, daily timer and operator identification functionality.

OPTIONS

- Steam source / voltage requirements

Integrity 175 – intended to operate from facility steam source, 120V AC/15 Amp ground-fault circuit interrupters (GFCI) electrical connection required for control system.

Integrity 175SG – steam created from integrated steam boiler located within the sterilizer footprint, 120V AC/15 Amp GFCI electrical connection required for control system.

208V 3Ph, 50 Amp, 60 Hz electrical connection required for integrated steam generator.

480V 3Ph, 22 Amp, 60 Hz electrical connection required for integrated steam generator.

- Install location

Recessed – sterilizer is mounted inside a wall opening with service accessibility provided behind finished wall.

Freestanding/cabinet – stainless steel side panels and frame provided to allow stand alone room installation.

Seismic tie-down kit/anchorage assembly – Seismic anchoring requirements per California Building Code (CBC).

Liquid cycle – Optional liquid cycle and liquid temp load probe.

STANDARDS

ASME Code, Section VIII, Division 1 for unfired pressure vessels, shell and door are constructed to withstand working pressure of 50 psig.

(Optional) steam generator is built in accordance with ASME Section VIII and shall bear UB mark: Max. working pressure 60 psig.

USA–UL 61010-1, IEC61010-2-040:2005 as certified by Met Laboratories Inc.

CSA – C22.2 No. 61010-1

OHSPD – Seismic anchoring requirements pending per California Building Code

Factory programmed cycles have been performance validated to ANSI/AAMI ST-8:2008

PROCESSING CYCLES

Immediate Use 1 (3 minute exposure time) – The Immediate Use 1 cycle program will sterilize one (1) unwrapped, non-porous instrument no heavier than 0.22 lbs (100 grams) This program provides quick sterilization for accidentally dropped instruments for immediate use. Porous, lumened or cannulated items cannot be processed using the Immediate Use 1 cycle. Exposure temperature is 270° F (132 °C) for 3 minutes, 1 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Immediate Use 2 (4 minute exposure time) – The Immediate Use 2 cycle program is recommended for processing two (2), 25 pound (11.36 kg) unwrapped instrument trays and up to 3 lumen instruments (2 mm ID minimum by 400 mm long maximum). This program provides quick sterilization for immediate use. Exposure temperature is 270° F (132 °C) for 4 minutes, 1 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Express Prevacuum (Immediate Use 3) – The Express Prevacuum cycle program is recommended for processing two (2), single wrapped, 25 pound (11.36 kg) instrument trays and up to 3 lumen instruments (mm ID minimum by 400 mm long maximum). Peel pouches are not acceptable for sterilization with an Express cycle program. Sterilized items are intended for immediate use. The single wrapper used with the Express cycle program protects the sterilized item from contaminants en route from the *Integrity 175/175SG* to the point of use. Exposure temperature is 270° F (132 °C) for 4 minutes, 3 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Prevacuum 270 – The Prevacuum 270 cycle program is recommended for processing two (2), double-wrapped, 25 pound (11.36 kg) instrument trays and up to 3 lumen instruments (2 mm ID minimum by 400 mm long maximum) Exposure temperature is 270° F (132 °C) for 4 minutes, 30 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Prevacuum 275 – The Prevacuum 275 cycle program is recommended for processing two (2), double-wrapped, 25 pound (11.36 kg) instrument trays and up to 3 lumen instruments (2 mm ID minimum by 400 mm long maximum) Exposure temperature is 275° F (135 °C) for 3 minutes, 30 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Gravity 1 – The Gravity 1 cycle will sterilize a maximum of four (4) fabric packs. Exposure temperature is 250° F (121 °C) for 30 minutes, 15 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Gravity 2 – The Gravity 2 cycle is recommended for processing two (2), 25 pound (11.36 kg) double-wrapped instrument trays. Exposure temperature is 270° F (132 °C) for 15 minutes, 30 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Custom cycles – The custom cycle programs allow the customer to modify the parameter values to their unique specifications. The operator/supervisor/service technician may create twelve custom programs using any of the eight (8) program icons. It is the customer's responsibility to validate all custom cycle programs for sterilization assurance. The range for minimum steam exposure time will be determined by the selected steam exposure temperature.

Liquid cycle (optional) – The Liquid cycle program will sterilize a maximum of three (3) borosilicate containers with vented closures. Exposure temperature is 250° F (121 °C) for 45 minutes, dry time is not applicable. This cycle has been validated to AAMI ST-8:2008. Liquid cycles are not intended for the sterilization of materials that come into direct contact with patients.

TEST CYCLES

Warm up – The Warm up cycle program warms the sterilizer chamber before daily operation. Exposure temperature is 270° F (132 °C) for 4 minutes, 3 minute dry time. Do not use this program to sterilize materials.

BD test – The BD Test cycle is utilized to perform the Bowie-Dick Test on the sterilizer. Do not use this program to sterilize materials. Exposure temperature is 273° F (133.8 °C) for 3 ½ minutes, 2 minute dry time. This cycle has been validated to AAMI ST-8:2008.

Cycle test – The Cycle Test program verifies the repeatability of the operation cycles. The Cycle Test is a sterilizer-performance test conducted by authorized service technicians. Exposure temperature is 270° F (132 °C) for 15 minutes, 15 minute dry time. Do not use this program to sterilize materials.

Leak test – The Leak Test cycle program verifies the vacuum integrity of the sterilizer. The Leak Test cycle is a sterilizer-performance test conducted by authorized service technicians. The chamber must be empty for this test. Exposure temperature is 270° F (132 °C) for 4 minutes, 3 minute vacuum time, 5 minute keep time and 15 minute test time. This cycle has been validated to AAMI ST-8:2008.

CONTROLS

LCD touch screen display – The 5.7” (145 mm) color liquid crystal touch panel displays easy to use operator controls, operating conditions, service interface panel and troubleshooting information.

Countdown timer and progression bar – During cycle operation, the LCD touch screen displays a large countdown timer in addition to a progression bar to indicate the remaining cycle time during operation.

Operator/Supervisor/Service Mode – The *Integrity* 175/175SG has the ability to restrict access to custom cycle creation, sterilizer settings and service menus by utilizing the password identification feature.

Operator ID – The *Integrity* 175/175SG has the ability to enable the Operator ID feature that requires an up to 8 digit, alpha-numeric login when starting a sterilization or test cycle program. The operator ID will then appear on the cycle program printout and operation history.

Auto run timer – Allows the operator/supervisor/service technician to set the starting time for an automatic sterilization or test cycle.

Daily start up/shut down timer – The operator/supervisor/service technician has the ability to program the daily start-up (power-up) and daily turn-off (power-down) times for each day of the week. The power-down mode functions as an “Energy Saver” by cutting high voltage electricity to the integrated steam generator (175SG) or closing the incoming steam supply (175) to conserve utilities.

Printed cycle reports – Standard ink to paper impact printer equipped on all *Integrity* sterilizers to provide a hard copy cycle report. Printed cycle reports provide the start time, date, cycle count, sterilizer number, cycle type, temperature and pressure information during the cycle. The printed cycle reports also provide the operator ID and/or cycle error information when applicable.

Electronic data recording – The *Integrity*™ Sterilizer Compact Flash (CF) interface captures cycle report data electronically. The data is saved as a .csv file that can be moved to a personal computer for analysis and conversion to a graph in Microsoft Excel®.

Skytron recommends retrieving the cycle report files and saving to a PC on a monthly basis to avoid losing any recorded cycles..

Foot pedal control – The *Integrity* 175/175SG features a standard foot pedal door control that is contained within the foot print of the sterilizer. Additional clearance is not required in front of the unit to accommodate this feature.

On screen troubleshooting – The 5.7" (145 mm) LCD touch screen display features an error warning and on-screen troubleshooting system that can help identify a possible fault and reduce the amount of downtime for repair. Accessibility to this menu can be set for password protection.

CONSTRUCTION

Pressure vessel and steam jacket – The *Integrity* 175/175SG sterilizer features a rectangular, fully jacketed, pressure vessel with a maximum effective chamber capacity of 5.2 ft³ (146 cm³). The sterilization chamber, flange and door plate are constructed of SA-240 grade 316L stainless steel. The full steam jacket and reinforcement material are constructed of SA-240 grade 304L Stainless Steel. The vessel socket is manufactured with SA-479 Type 316L Stainless Steel. Maximum working pressure for the chamber and jacket is 50 psig (345 kPa).

Piping – A combination of Stainless Steel SUS304TP screwed joint and copper tubing C1220T ring joints are used throughout the steam and water piping system.

Optional steam generator – The optional steam generator features an automatic fill valve, pressure release valve, low water cut-off, high pressure cut-off, high temp cut-off and manual reset to comply with local jurisdictions. A selectable day timer allows the user to select the specific time to perform a manual blow down of the generator.

Standard power door – Power door opening and closing is standard on the *Integrity* 175 and 175SG. The door is raised and lowered utilizing an electric door motor and chain system by use of the standard foot pedal control or touch screen display. The recessed door gasket is activated by steam, eliminating the need for compressed air. The standard power door also features an obstruction detection device to stop the door operation prior to obstacles becoming pinched.

SAFETY FEATURES

Alarms – An error detected by the sterilizer control system will result in a related error message on the touch screen display. An audio alarm buzzer will sound and any cycle operating at the time will be aborted.

Safety valve(s) – ASME Section I/Section VIII capacity certified pressure release valves are in place to prevent the sterilizer from exceeding the rated pressure limit of the vessel or optional integrated steam generator.

Door safety – The door safety switch prevents the steam supply from entering the chamber unless the door is closed and sealed/locked. The door interlock also prevents the door from unlocking if the chamber pressure is not at atmospheric pressure.

Emergency E-stop knob – Pressing the emergency E-stop knob will terminate the operation of the sterilizer and return the chamber to atmospheric pressure.

Circuit protector – Electrical current is cut-off in the event of a short circuit or over-current condition in the control circuit of the sterilizer. A circuit breaker activation interrupts the power supply if the current exceeds the rated amperage to the circulation pump motor and door motor.

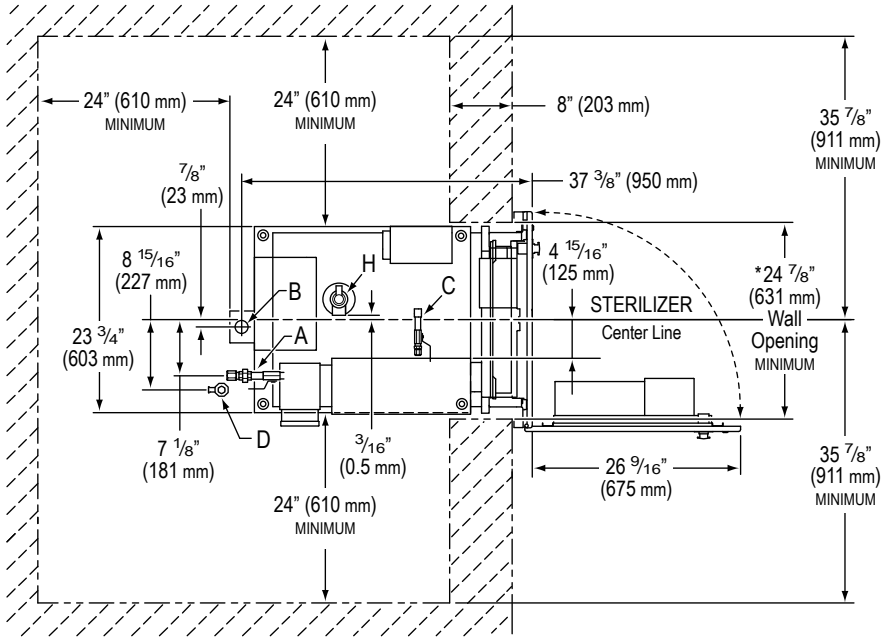
Steam generator overheat cutoff with manual reset (optional) – An overheat temperature protective device is provided to shutoff supply current in the event of an abnormal increase in temperature recorded within the integrated steam generator.

Steam generator low water cutoff (optional) – A low water protective device is provided to shutoff the electrical supply to the steam generator in the event of a water supply error to prevent damage to the generator heating elements.

Preventative maintenance – Annual maintenance and service agreements are available to help assure the reliability and low cost of ownership associated with SKYTRON products.

Engineering Data						
Model	Chamber Size inch (mm)	Heating	Total Weight lbs (kg)	Heat Loss BTU/hr at 86°F (30°C)		
				Freestanding	Recessed	
					Operator Side	Service Side
Integrity 175	17½" x 17½" x 26½" (445 x 445 x 675)	House Steam	1254 (569)	2531	982	1549
Integrity 175SG		Steam Generator	1375 (624)	3326	982	2344

Integrity™ 175 Recessed



PLAN VIEW

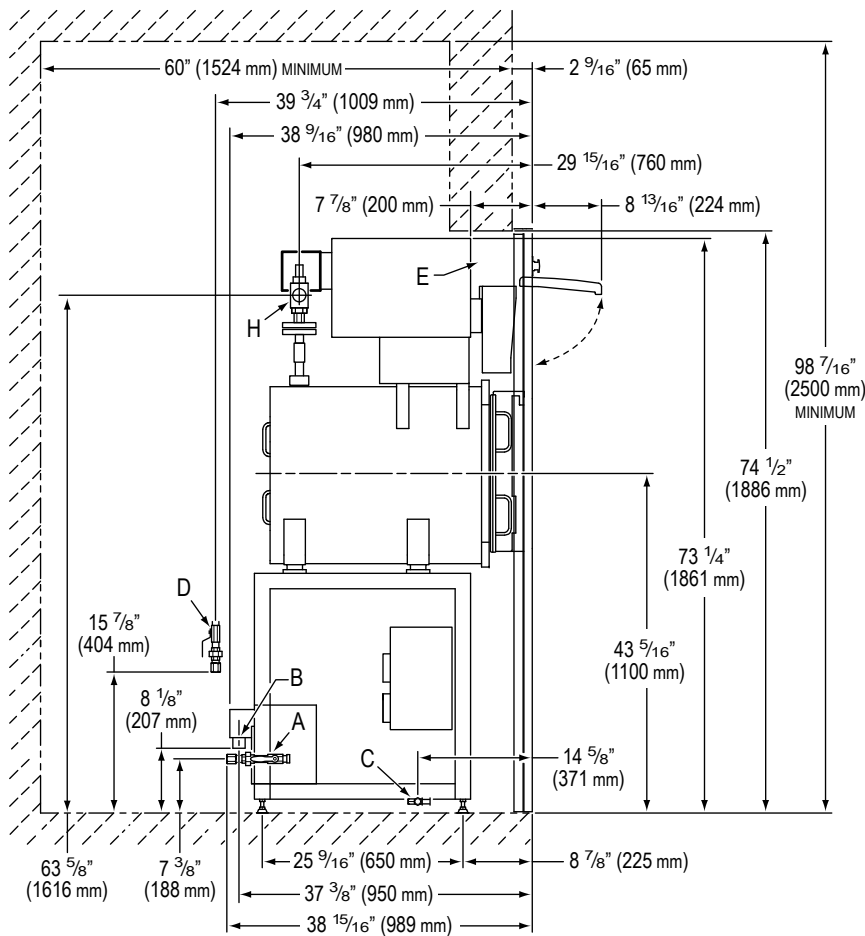
LEGEND

- A) COLD WATER SUPPLY
▶ 1/2" NPT Fitting
- B) RECIRCULATION TANK DRAIN
▶ 1" NPT Fitting
- C) RECIRCULATION TANK MANUAL DRAIN
▶ 3/8" ODT x 8' L Tube
- D) STEAM SUPPLY
▶ 1/2" NPT Fitting
- E) 120 VAC POWER CORD
- H) JACKET SAFETY VALVE
▶ 1" NPT Fitting

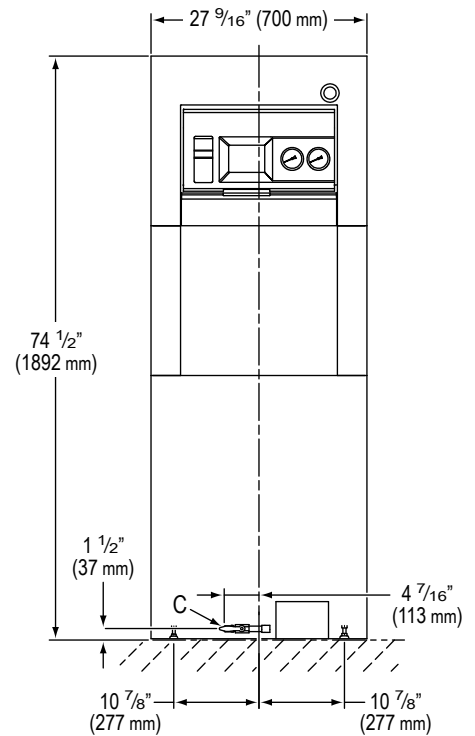
Access to the recessed area from the control end of the sterilizer is recommended.

Clearances shown are the minimum for installing and servicing the equipment.

*25 7/8" (651 mm) wall opening to avoid minor disassembly.



SIDE VIEW



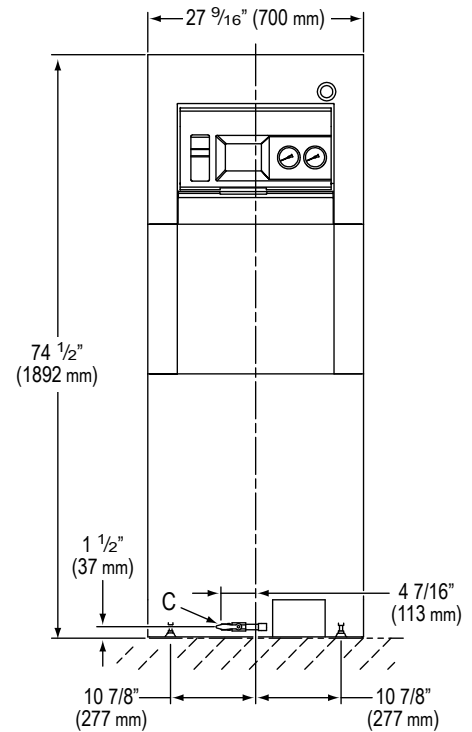
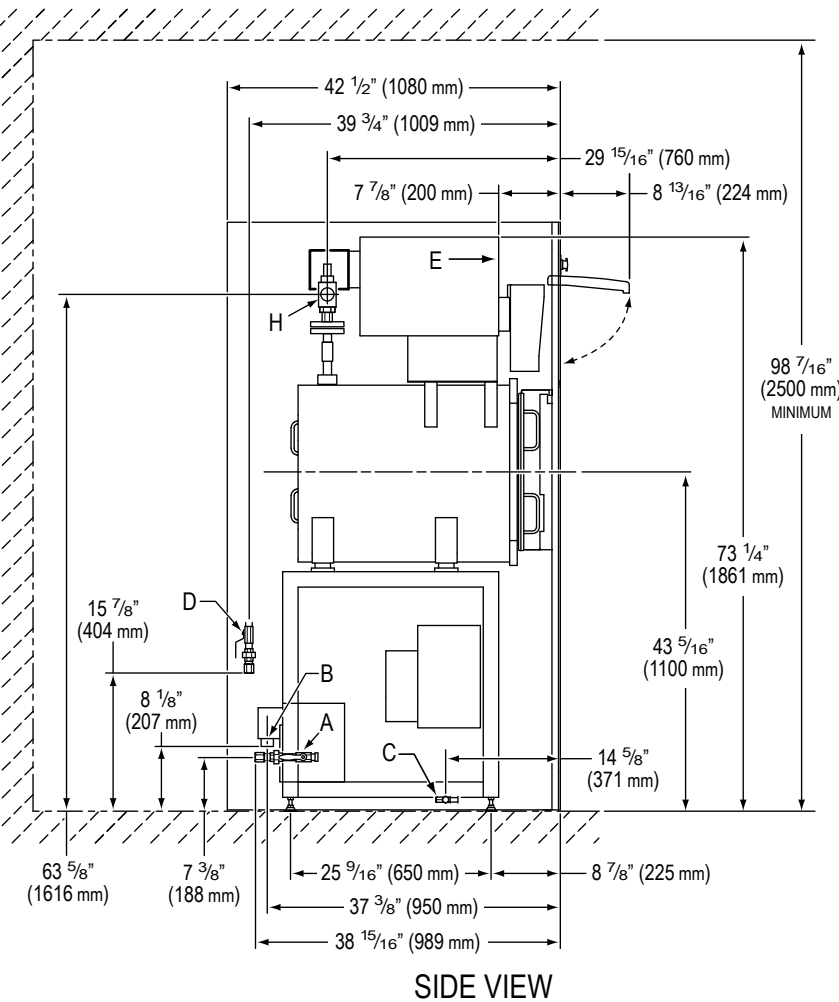
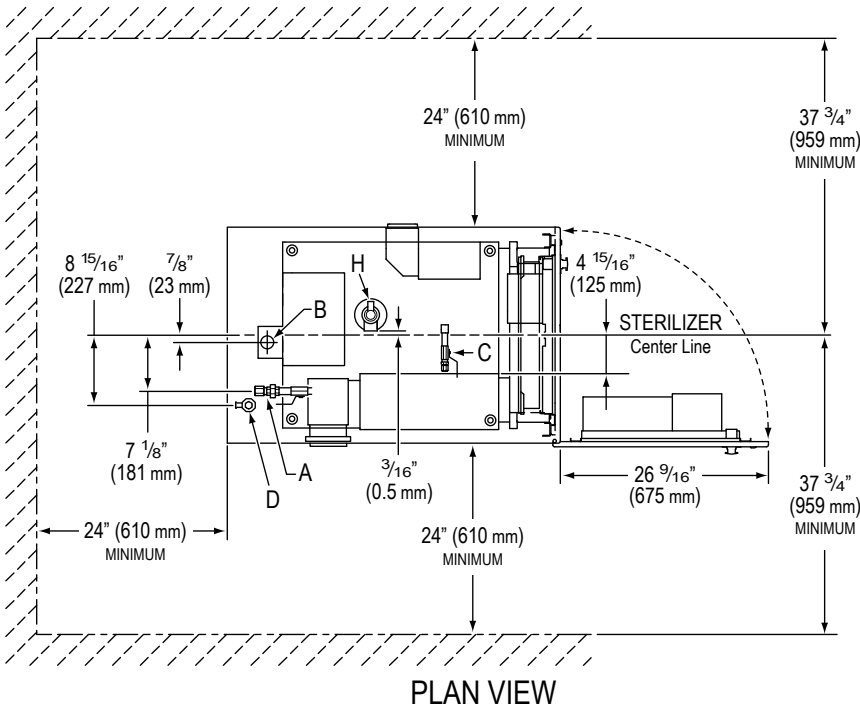
FRONT VIEW

Integrity™ 175 Freestanding

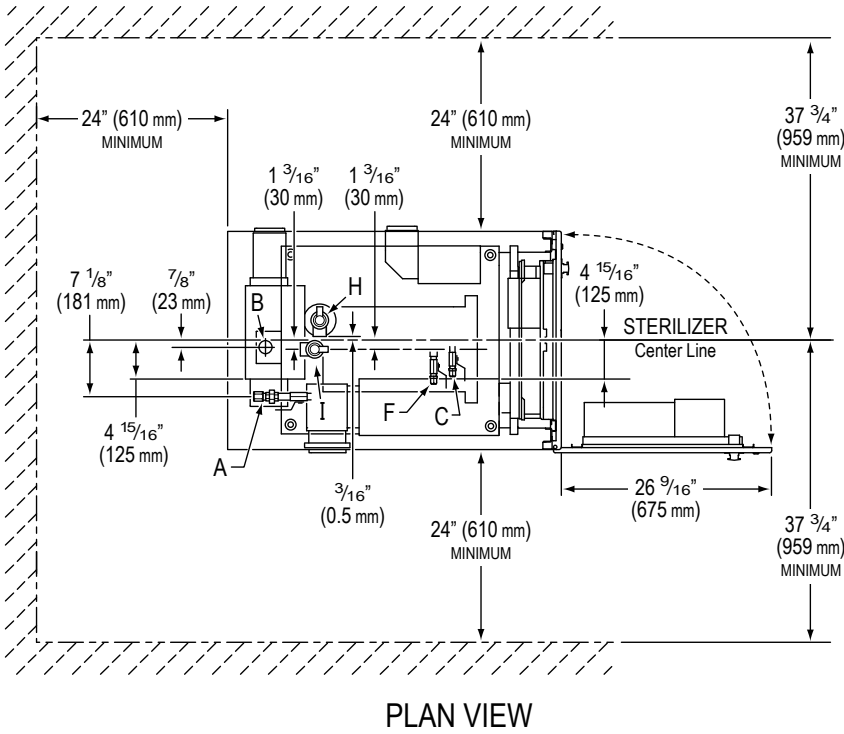
LEGEND

- A) COLD WATER SUPPLY
▶ 1/2" NPT Fitting
- B) RECIRCULATION TANK DRAIN
▶ 1" NPT Fitting
- C) RECIRCULATION TANK MANUAL DRAIN
▶ 3/8" ODT x 8' L Tube
- D) STEAM SUPPLY
▶ 1/2" NPT Fitting
- E) 120 VAC POWER CORD
- H) JACKET SAFETY VALVE
▶ 1" NPT Fitting

Clearances shown are the minimum for installing and servicing the equipment.



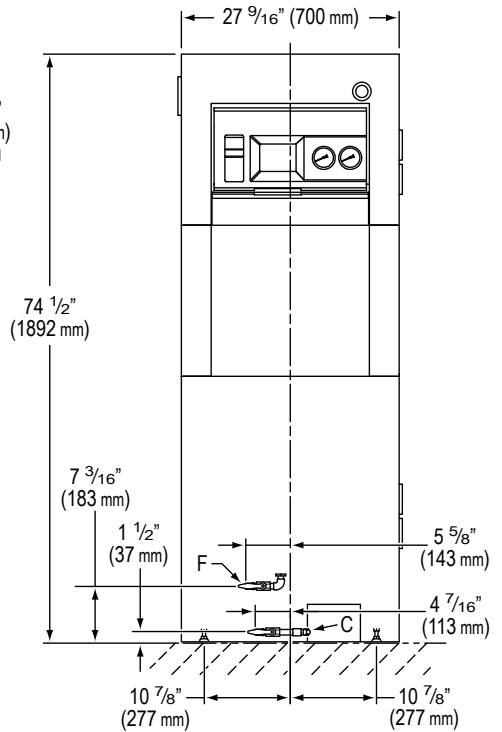
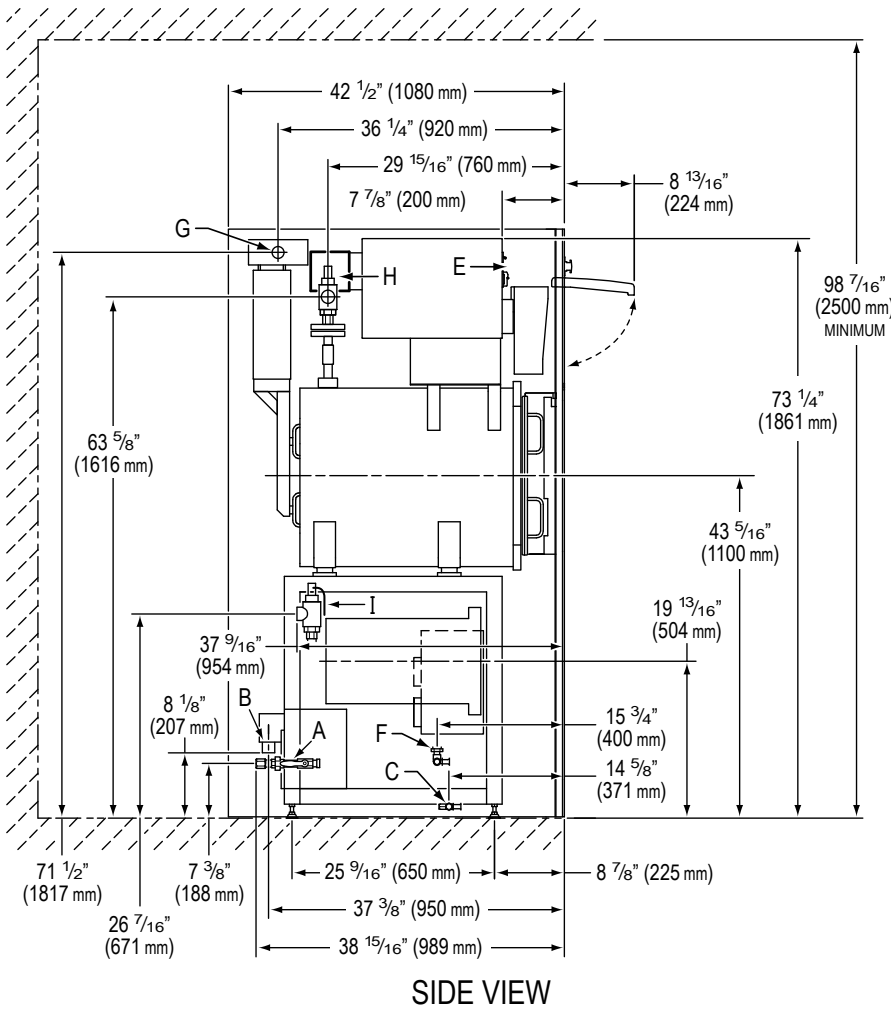
Integrity™ 175SG Freestanding



LEGEND

- A) COLD WATER SUPPLY
▶ 1/2" NPT Fitting
- B) RECIRCULATION TANK DRAIN
▶ 1" NPT Fitting
- C) RECIRCULATION TANK MANUAL DRAIN
▶ 3/8" ODT x 8' L Tube
- E) 120 VAC POWER CORD
- F) STEAM GENERATOR MANUAL DRAIN
▶ 3/8" ODT x 8' L Tube
- G) STEAM GENERATOR ELECTRICAL POWER
- H) JACKET SAFETY VALVE
▶ 1" NPT Fitting
- I) STEAM GENERATOR SAFETY VALVE
▶ 1" NPT Fitting

Clearances shown are the minimum for installing and servicing the equipment.



UTILITY REQUIREMENTS

- Integrity™ 175

Steam – 50 - 80 PSIG (0.34 - 0.55 MPa) dynamic pressure, ½" NPT (20A) connection, 65 lb/hour (30 kg/hour) flow rate.

Recirculation Tank Overflow Drain – 1" NPT connection provided. Floor sink with minimum 2" ID drain to accommodate recirculation tank overflow recommended. Water drain temperature may exceed 140° F (60 °C) if instructions are not followed.

Recirculation Tank Manual Drain – ¾" ODT, tube provided.

Cold Water Supply – ½" NPT connection provided. 30 to 50 PSIG (0.21 - 0.34 MPa), 50° to 77° F (10 to 25 °C) Total hardness as CaCO₂, 50 -120 mg/L and max 171 mg/L, Total dissolved solids 100 - 200 mg/L and max 500 mg/L, pH 6.8 - 7.5 and max 6.5 - 8.5, Silt (SDI) ≤5

Steam Pressure Relief Valve – 1" NPT outlet for jacket.

System Electrical Power – 120 VAC, 60 Hz, single phase, 15A power cord with 3 prong grounded plug provided, dedicated GFCI outlet required.

- Integrity™ 175SG

Recirculation Tank Overflow Drain – 1" NPT connection provided. Floor sink with minimum 2" ID drain to accommodate recirculation tank overflow recommended. Water drain temperature may exceed 140° F (60 °C) if instructions are not followed.

Recirculation Tank Manual Drain – ¾" ODT, 8' tube provided.

Steam Generator Manual Drain – ¾" ODT, 8' tube provided.

Cold Water Supply – ½" NPT connection provided. 30 to 50 PSIG (0.21 - 0.34 MPa), 50° to 77° F (10 to 25 °C) Total hardness as CaCO₂ up to 130 mg/L, Total dissolved solids 50 - 150 mg/L and max 250 mg/L, Total Silica 0.1 - 1.0 mg/L and max 2.5 mg/L, pH 6.8 - 7.5, Resistivity – ehms/cm³ 3000 - 10000, max 40000 (conductivity: 100 - 300µ 5/cm and max 2.5 mg/L), Silt (SDI) ≤5

Steam Pressure Relief Valves – 1" NPT outlet for jacket and steam generator.

System Electrical Power – 120 VAC, 60 Hz, single phase, 15A power cord with 3 prong grounded plug provided, dedicated GFCI outlet required.

Steam Generator Electrical Power (Optional) –

208 VAC, 60 Hz, 3 phase, 50A

480 VAC, 60 Hz, 3 phase, 22A

Utilities Consumption						
Model	Chamber Size inch (mm)	Heating	Water			Steam
			Peak gpm (lpm)	Maximum Consumption gal/cycle (l/cycle)	Average Consumption gal/cycle (l/cycle)	Per cycle lb/cycle (kg/cycle)
Integrity 175	17½" x 17½" x 26½" (445 x 445 x 675)	House Steam	2.9 (11)	56.6 (215)	50 (190)	15.65 (7.1)
Integrity 175SG		Steam Generator	4.23 (16)	64.7 (246)	52.1 (198)	N/A

REVISION HISTORY

Date	Revision	Revision History
11/18/2015	4	Pg 7, 8, 9, 10,11 - Overflow drain width corrected from 1-1/2" to 1" Pg 4 - Removed the 9,999 statement from the electronic data recordings section

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