

TECHNICAL

DATA SHEET

PRIMUS GENERAL PURPOSE – Small Steam Sterilizers

These sterilizers are designed for laboratory applications including research laboratories, bio-containment and animal care facilities. PRIMUS sterilizers are designed and manufactured in the USA according to Quality Management Systems which are in compliance with ISO 9001:2008, ISO 13485:2003, CMDCAS and FDA's Good Manufacturing Practice (GMP) for Medical Devices: General Regulation (21CFR Part 820). Small size sterilizers are one segment of 19 standard sizes manufactured by PRIMUS and are recognized for government contracts via Federal Supply Schedule Contract #V797P-4400B. We can also custom manufacture a sterilizer to meet your specifications.



STERILIZER DESIGN

The pressure vessel is the heart of any sterilizer. PRIMUS offers simple, straight forward, design. All PRIMUS pressure vessels are constructed of solid stainless steel and are fabricated by PRIMUS in our quality controlled ASME facility. The interior chamber surface is polished to a mirror finish of <math><10\mu\text{ in. Ra}</math>. The brilliant Pri-Mirror[®] reflective chamber finish sets the highest standard for cleanliness and offers easy spill clean-up and resistance to staining and degradation.

PRIMUS rectangular chambers eliminate the wasted space and high utility costs common to old-style cylindrical or elliptical chambers and jackets. (E.g., The PRIMUS 26 cu. ft. 26" x 26" x 67" sterilizer with vertical door, occupies less floor space and provides greater capacity than the conventional 24" x 36" x 48" hinged radial arm door sterilizers.)

PRIMUS' unique design reduces the high service cost associated with conventional hinged/radial arm doors and, most importantly, provides an added margin of operator safety.

PRIMUS vertically operating doors operate with minimal hand pressure. Where hands-free door

operation is desired (for single door units only), a mushroom button actuated by elbow/forearm is offered. An optional foot switch is available. For double door units ordered with the Power Door option the doors are operated through the use of the touchpad only.

The PRIMUS vertically sliding door design is efficient, reliable and inherently safe.

STERILIZER CYCLES

All PRIMUS steam sterilizers include Gravity, Vacuum and Liquid cycle settings. A Test/Vac cycle is provided for utilizing Bowie-Dick[™] tests.

General Purpose sterilizers provide for steam sterilization and decontamination of laboratory research and animal care products. Applications include wrapped and unwrapped hard goods, animal feed and bedding, cages and textiles. Liquids in self-venting and open containers are sterilized using Liquid cycle settings.

The time-tested and reliable PRIMUS PSS500 Microcomputer Control is an industrial microprocessor providing accuracy and automation for all customer requirements. This simple, versatile, control has become the first choice for both sterilizer users and service technicians.



PRIMUS

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PURCHASING SPECIFICATION DATA SHEET

TECHNICAL DATA SHEET

GENERAL *(Options italicized)*

All models include Vacuum, Gravity and Liquids cycles. *A Low Temperature Flowing Steam option provides flowing steam at low temperatures for Research laboratories for specific applications.*

VESSEL MATERIAL AND CONSTRUCTION

The sterilizer will have a double-wall design providing for a fully jacketed pressure vessel. The chamber cross section will be rectangular with width and height dimensions to include:

AA	16" x 16" x 26"	C	26" x 26" x 49"
A	20" x 20" x 38"	D	26" x 26" x 67"
B	26" x 26" x 39"		

The vessel material will be non-laminated solid stainless steel plate/sheet. The chamber, head-ring and door plate material will be 316L stainless steel with an interior Pri-Mirror® finish of <10µ in. Ra.

DESIGN and MANUFACTURING APPROVALS

The vessel will be designed and constructed to ASME code Section VIII Division I and pressure rated for 45 PSIG and full vacuum. ASME Code Stamp and U-1 form will bear the name of PRIMUS as the specified US manufacturer.

The sterilizer will be manufactured according to Quality Management Systems which are in compliance with ISO 9001, ISO 13485, CMDCAS and will be UL listed and in conformance with CSA requirements.

DOOR CONSTRUCTION

An inherently safe design, counterbalanced vertically operating door will be operable with minimal hand pressure and will operate within the overall dimensions of the sterilizer frame. In the open position, the insulated door will be secured behind a panel preventing the operator from contact with hot surfaces. An interlock will prevent cycle start unless door is closed and locked.

GENERAL CONSTRUCTION

The vessel will be insulated with 1" semi-rigid high temperature fiberglass board/blanket insulation overlaid with formed aluminum paneling and mounted in a structural steel frame. The frame will be enamel coated and fitted with adjustable legs on self-centering floor pads. The fascia and side panels will be 16-gauge, type 304 stainless-steel, removable for easy service access.

Water Conservation

To conserve water and assure effluent exhausted to drain is 140° F or below, PRIMUS provides quench water on demand for exhaust effluent.

EQUIPMENT WARRANTY

Sterilizer pressure vessels manufactured by PRIMUS are warranted against defects in workmanship and materials under normal use and operation for fifteen years where the sterilizer is continually maintained under PRIMUS service contract.

SERVICE and EQUIPMENT ACCESS

Standard service access, when facing the unit, will be from left side and top. Wiring will be laid side-by-side and mechanically secured flat against the metal insulation cover. All wiring will be clearly labeled or readily visible for visual tracing. Piping components will be threaded rigid brass and flared copper fittings, positioned with sufficient space for removal and replacement without disassembly of the entire piping assembly. Wiring and piping components will be non-proprietary, industrial grade, available through Authorized Service Agencies, local supply house, or direct from PRIMUS.

STEAM SOURCE

Steam will be from an in-house steam source in the quantity and quality specified. *Optional electric steam boiler, clean steam boiler or steam-to-steam generator may be specified. Contact PRIMUS for specific boiler information.*

CONTROLS

A PSS500 microcomputer will offer a selection of eight (8) separate programs for the sterilization of wrapped goods, hard-goods, liquids and test cycles. In addition to our standard Test/Vac Cycle, an optional automatic Vacuum Leak Rate Test cycle is available to ensure the seal integrity of the vessel and piping, if required.

Cycle parameters may be set by the user and are adaptable to a wide range of products. Alarms are annunciated, displayed and printed. Cycle process parameters will be displayed and recorded throughout the cycle. A side-mounted control panel and a thermal printer dot-matrix technology, and 32 characters per line printing is provided. A copy of the sterilization cycle report will be available at the end of the run.

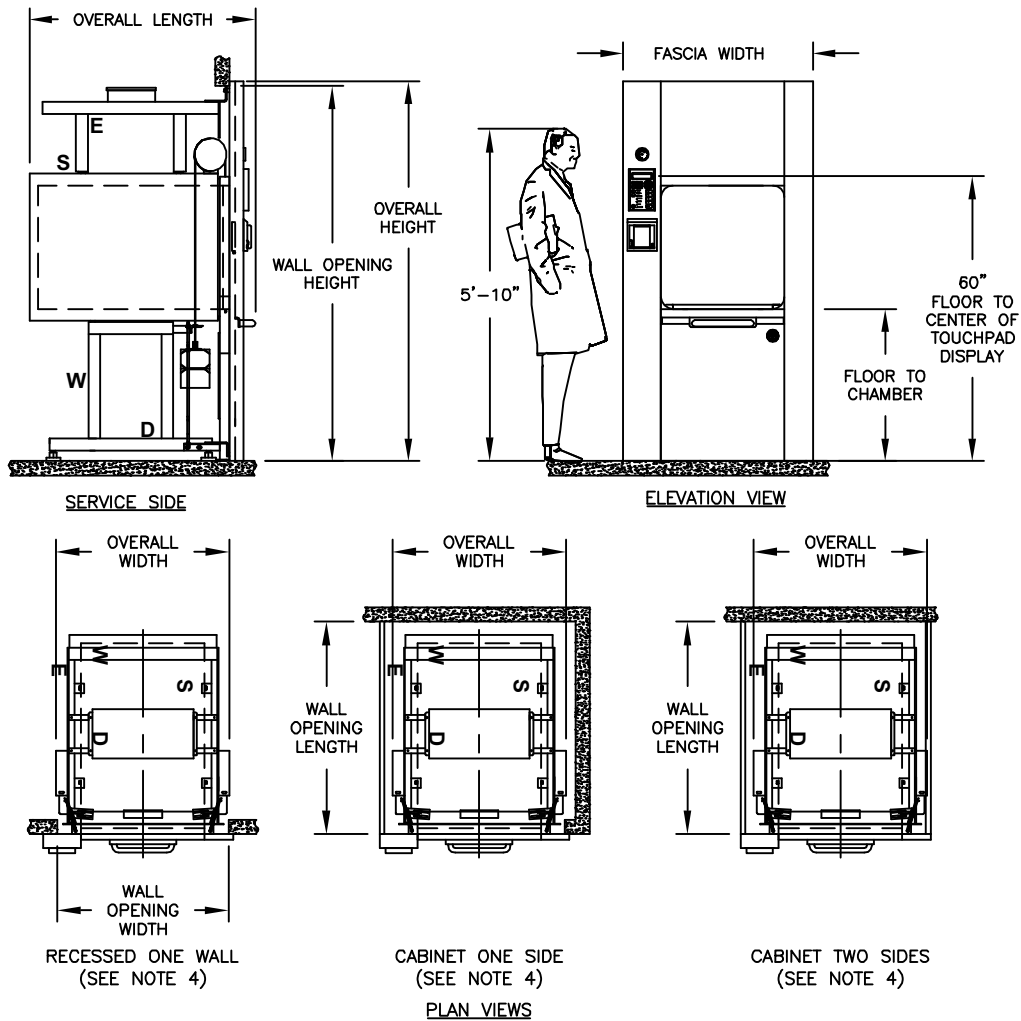


PRIMUS PSS500 PSS8 Trinity PSS7 PRI-MATIC®
CONTROL PANELS WITH PRINTER



PRIMUS General Purpose - Small Sized Autoclaves

SINGLE DOOR



TECHNICAL DATA SHEET

VOLUME/DIMENSIONS CHART

*Refer to General Arrangement (GA) drawings for details and final connection point to utility services (S-Steam, W-Water, D-Drain, E-Electrical, A-Air).

MODEL	AA	A	B	C	D
Chamber Size (w x h x l) inches/millimeters	16 X 16 X 26 406.4 X 406.4 X 660.4	20 X 20 X 38 508 X 508 X 965.2	26 X 26 X 39 660.4 X 660.4 X 990.6	26 X 26 X 49 660.4 X 660.4 X 1244.6	26 X 26 X 67 660.4 X 660.4 X 1701.8
Chamber Capacity	3.9 ft ³ / .11 m ³	8.8 ft ³ / .25 m ³	15.3 ft ³ / .43 m ³	19.2 ft ³ / .54 m ³	26.2 ft ³ / .74 m ³
Overall Width	25.38 / 644.6	29.25 / 743.0	35.50 / 901.7	35.50 / 901.7	35.50 / 901.7
Overall Height ¹	74.00 / 1879.6	74.00 / 1879.6	80.00 / 2032.0	80.00 / 2032.0	80.00 / 2032.0
Overall Length (SD) ^{2,3}	33.88 / 860.5	46.38 / 1178.0	47.56 / 1208.0	57.56 / 1462.1	75.50 / 1917.7
Wall Opening Width ⁴	26.00 / 660.4	30.00 / 762.0	36.00 / 914.4	36.00 / 914.4	36.00 / 914.4
Wall Opening Height	73.00 / 1854.2	73.00 / 1854.2	79.00 / 2006.6	79.00 / 2006.6	79.00 / 2006.6
Wall Opening Length	32.00 / 812.8	44.00 / 1117.6	46.00 / 1168.4	56.00 / 1405.6	74.00 / 1857.4
Fascia Width ¹	30.00 / 762.0	34.00 / 863.6	40.00 / 1016.0	40.00 / 1016.0	40.00 / 1016.0
Floor to Chamber	38.50 / 977.9	38.50 / 977.9	32.00 / 812.8	32.00 / 812.8	32.00 / 812.8

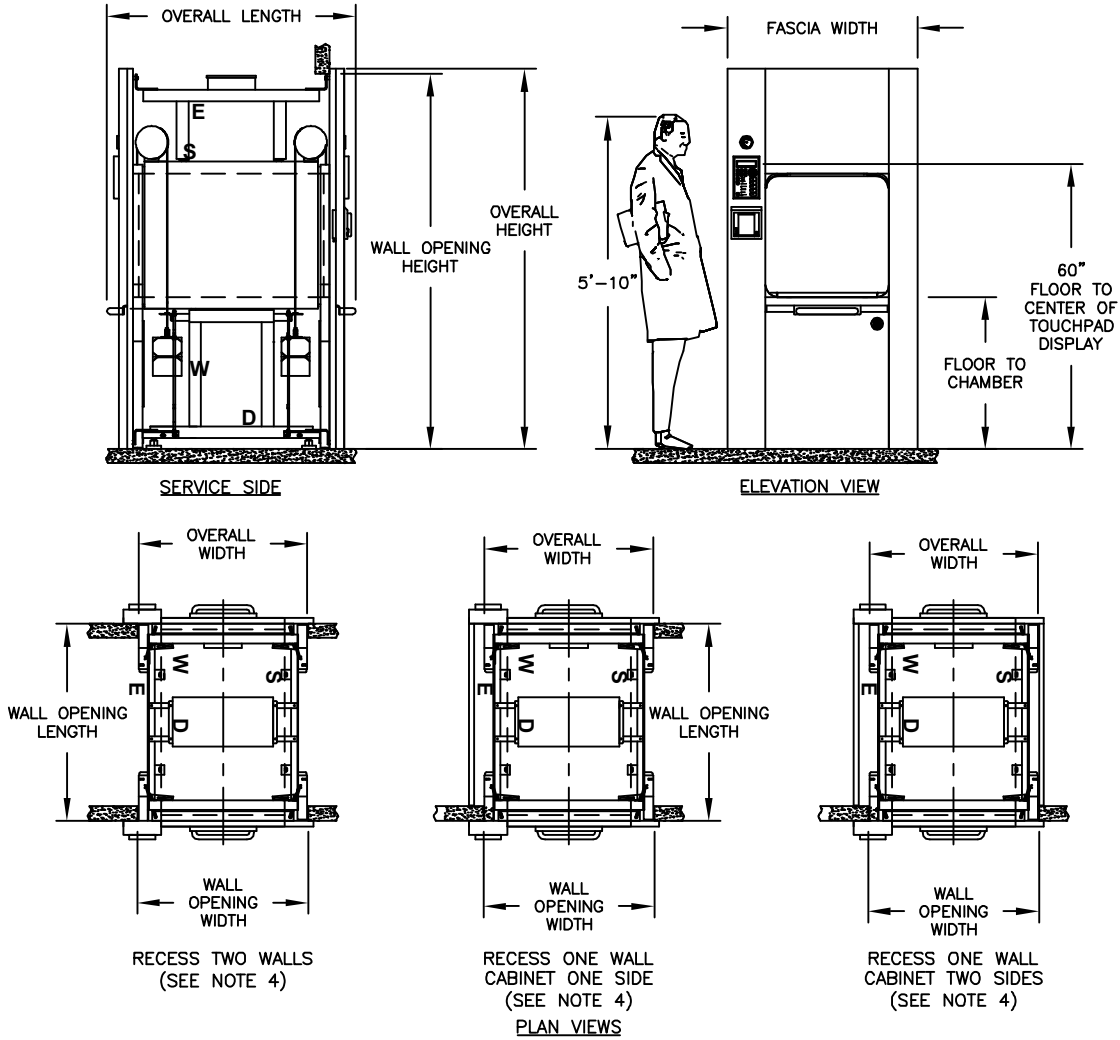
1. Fascia extends 1" beyond wall opening on each side overlapping the wall and sealing the opening.
2. Allow minimum 2" clearance at rear of recessed unit only. Cabinet side models have rear clearance built in.
3. Handle projects from the face of the fascia to the outer radius of the handle 2.375" for Models AA & A. Models B, C, & D the handle projects 4.25".
4. Contact PRIMUS for alternative wall opening.
5. Standard Left Side Service/equipment access shown. Optional right side access is available.



PRIMUS General Purpose- Small Sized Autoclaves

TECHNICAL DATA SHEET

DOUBLE DOOR



VOLUME/DIMENSIONS CHART

*Refer to General Arrangement (GA) drawings for details and final connection point to utility services
(S-Steam, W-Water, D-Drain, E-Electrical, A-Air).

MODEL	AA	A	B	C	D
Chamber Size (w x h x l) inches/millimeters	16 X 16 X 26 406.4 X 406.4 X 660.4	20 X 20 X 38 508 X 508 X 965.2	26 X 26 X 39 660.4 X 660.4 X 990.6	26 X 26 X 49 660.4 X 660.4 X 1244.6	26 X 26 X 67 660.4 X 660.4 X 1701.8
Chamber Capacity	3.9 ft ³ / .11 m ³	8.8 ft ³ / .25 m ³	15.3 ft ³ / .43 m ³	19.2 ft ³ / .54 m ³	26.2 ft ³ / .74 m ³
Overall Width	25.38 / 644.6	29.25 / 743.0	35.50 / 901.7	35.50 / 901.7	35.50 / 901.7
Overall Height ¹	74.00 / 1879.6	74.00 / 1879.6	80.00 / 2032.0	80.00 / 2032.0	80.00 / 2032.0
Overall Length (DD) ²	35.94 / 912.9	47.25 / 1197.4	52.44 / 1331.9	62.44 / 1585.98	80.44 / 2043.18
Wall Opening Width ³	26.00 / 660.4	30.00 / 762.0	36.00 / 914.4	36.00 / 914.4	36.00 / 914.4
Wall Opening Height	73.00 / 1854.2	73.00 / 1854.2	79.00 / 2006.6	79.00 / 2006.6	79.00 / 2006.6
Wall Opening Length	27.69 / 703.3	40.44 / 1027.2	41.44 / 1052.6	51.44 / 1306.6	69.44 / 1763.8
Fascia Width	30.00 / 762.00	34.00 / 863.6	40.00 / 1016.00	40.00 / 1016.00	40.00 / 1016.00
Floor to Chamber	38.50 / 977.9	38.50 / 977.9	32.00 / 812.8	32.00 / 812.8	32.00 / 812.8

- Fascia extends 1" beyond wall opening on each side overlapping the wall and sealing the opening.
- Handle projects from the face of the fascia to the outer radius of the handle 2.375" for Models AA & A. Models B, C, & D the handle projects 4.25".
- Contact PRIMUS for alternative wall opening.
- Standard Left Side Service/equipment access shown. Optional right side access is available.

ARCHITECTURAL NOTES:

1. Allow sufficient space for traps, shut-off's, filters and other utility supply components.
2. Utility (service disconnects) shall be provided and installed "By Others".
3. Building or structure modifications to accommodate the sterilizer, as well as, sterilizer shoring, rigging, cribbing and/or crane requirements into the facility shall be provided "By Others".
4. Provide maximum mechanical and service access space, a minimum of 24", additional space required when boiler specified. See General Arrangement drawing for placement of ancillary equipment and service access.
5. Some options affect utility services and overall dimensions.
6. Water Quality - refer to page 8.
5. The Manufacturer's Equipment Warranty does not cover failure due to improper utility provisions.
6. Drawings not to scale.
7. Wall thickness must be provided on single and double door models recessed through 1 wall, with cabinet sides.
8. Floor under sterilizer must be water tight and sloped to the drain.

UTILITY SERVICES

Provide utility services within 6'-0" of final connection to sterilizer. Optimum sterilizer performance requires the specified utilities.

MODEL	STEAM (S) Building Steam Supply • Pipe Size: 3/4" NPT • Quality: Condensate free 97% to 100% saturated vapor (suitably trapped to ensure dry steam and filtered to remove particulates) • Pressure: 50-80 PSIG Dynamic Note: 1.) Steam-to-steam generator requires minimum pressure 65 PSIG house steam		WATER (W) Cold Water Supply • Pipe Size: 3/4" NPT • Temperature: < 70° F • Pressure: 50-70 PSIG Dynamic		AIR (A) Instrument Air • Connection: See Below • Quality: Dry and oil free • Pressure: 60-80 PSI Dynamic	DRAIN (D) Building Drain System Minimum 2" • Location: Locate floor sink directly under sterilizer Note: 1.) Exhaust discharge is cooled to < 140°F 2.) 12" x 12" x 8" floor sink is recommended by PRIMUS	ELECTRICAL (E) Building Power Supply - Dedicated Circuit • Volts: 110 • Phase: Single • Amps: 10 Note: Additional circuits required for ancillary and optional equipment i.e., vacuum pump, boost pump, boiler, etc.
	NPT	LBS/HR (KG/HR)	NPT	GPM (Liter)	NPT	NPT (Discharge Pipe Size)	
AA	3/4"	50.0 (22.68)	3/4"	8 (30)	1/4"	3/4"	
A	3/4"	65.0 (29.48)	3/4"	8 (30)	1/4"	3/4"	
B	3/4"	100.0 (45.36)	3/4"	8 (30)	1/4"	3/4"	
C	3/4"	134.0 (60.78)	3/4"	14 (53)	1/4"	1"	
D	3/4"	204.0 (92.53)	3/4"	14 (53)	1/4"	1"	

HVAC DATA Heat loss, at ambient of 70° F.

	MODEL	KBTU'S/HR
SINGLE DOOR: Through one wall, at fascia	AA	1.5
	A	2.2
	B	4.1
	C	4.1
	D	4.1
SINGLE DOOR: Through one wall, service area	AA	1.9
	A	3.4
	B	5.7
	C	7.1
	D	9.7
SINGLE DOOR: Free standing, cabinet total	AA	3.4
	A	5.6
	B	9.8
	C	11.2
	D	13.8

	MODEL	KBTU'S/HR
DOUBLE DOOR: Through one wall, at fascia	AA	1.5
	A	2.2
	B	4.1
	C	4.1
	D	4.1
DOUBLE DOOR: Through one wall, service area	AA	3.3
	A	5.1
	B	7.8
	C	9.7
	D	11.5
DOUBLE DOOR: Through two walls, at each fascia	AA	1.5
	A	2.2
	B	4.1
	C	4.1
	D	4.1
DOUBLE DOOR: Through two walls, service area	AA	1.8
	A	2.9
	B	3.7
	C	5.6
	D	7.4

ELECTRIC BOILERS

GEB Electric Heated Boiler - Carbon steel. Uses house supplied water. Includes feedwater boost pump.

GEBC Electric Heated Boiler - Stainless steel construction for clean steam generation. Includes stainless steel feedwater boost pump.

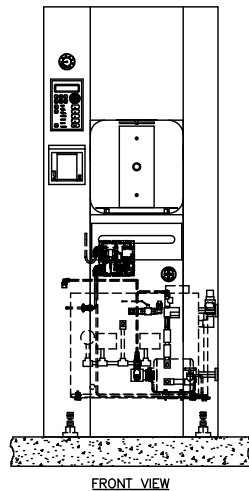
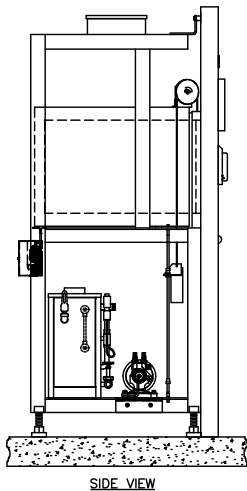
NOTE: Stainless Steel Boilers shall be operated using only deionized water, having a maximum conductance of 1 microSeimen per cm (1 μ S/cm) [minimum specific resistivity of 1 megohm per cm (1MW/cm)].

PRI-Pure Reverse Osmosis System GP30

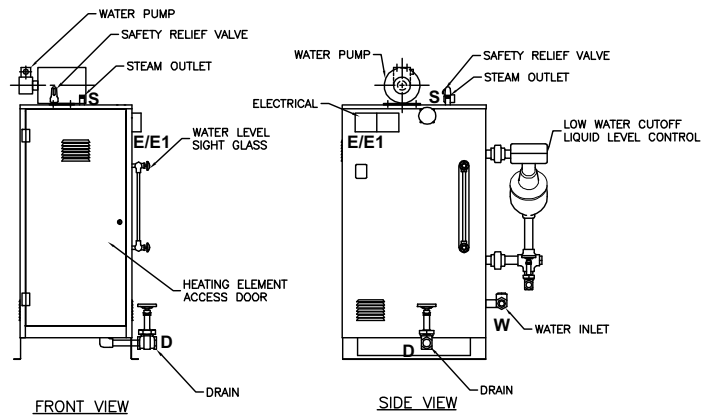
Designed and recommended for all PRIMUS small sterilizers with intergal carbon steel boilers. The PRI-Pure, when used together with softened water, will significantly increase the life of the boiler and sterilizer by removing up to 99% of damaging contaminants.

MODEL		AA	A	B	C	D
Chamber Size (w x h x l) inches/millimeters		16 x 16 x 26 406.4 x 406.4 x 660.4	20 x 20 x 38 508 x 508 x 965.2	26 x 26 x 39 660.4 x 660.4 x 990.6	26 x 26 x 49 660.4 x 660.4 x 1244.6	26 x 26 x 67 660.4 x 660.4 x 1701.8
Boiler Size	kW/Hr.	24.0	24.0	36.0	48.0	72.0
Boiler Steam Output	lbs./Hr	73.0	73.0	108.0	145.0	217.0
Integral	Model	EB1-AA	EB1-A	EB1-B ¹	N/A	N/A
Stand Alone	Model	EB-AA	EB-A	EB-B	EB-C	EB-D
V.A.C. 208, 3 Ph	Amperes	67	67	100	134	200
V.A.C.240, 3 Ph	Amperes	58	58	87	116	174
V.A.C. 480, 3 Ph	Amperes	29	29	44	58	87
V.A.C. 110, 60 Hz ¹	Amperes	10	10	10	10	10

1. Controls Current
N/A - Not Available



16" x 16" x 26" shown with integral boiler



Stand Alone Boiler

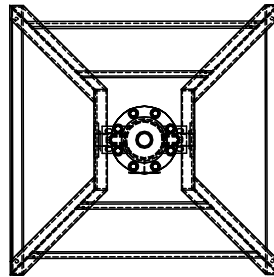
STEAM TO STEAM GENERATOR (SCS1 & SCS2)

Steam to Steam Generator used to generate either clean or pure steam. The preferred method of generating Clean or Pure steam, when house steam is available to drive the generator. Converts to steam, whatever quality water is delivered.

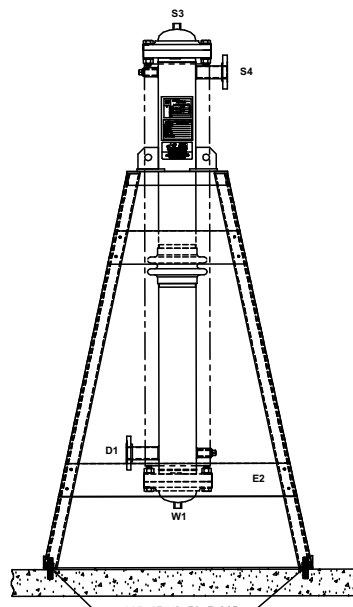
SCS1 Pure Steam - stainless steel steam to steam generator with sanitary fittings, double tube sheet construction. Generated from WFI quality depyronegated water. The water source to the Pure Steam Generator is either house generated or "By Others".

SCS2 Clean Steam - stainless steel steam to steam generator with threaded fittings, threaded connections and single tube construction. Generated from distilled or reverse osmosis water. Clean Steam sterilizers normally include stainless steel piping for all wetted surfaces in the product loop.

NOTE: Refer to Page 8 for information on Water Quality.
 Refer to the boiler/steam to steam generator maintenance manual provided with the sterilizer prior to using any boiler treatment chemicals.
 Contact PRIMUS for further recommendations.



TOP VIEW



FRONT VIEW

Use the following pages to custom design your sterilizer by checking the boxes of the configuration and options required for your project. Transfer all items checked to the Specification Worksheet (Pages 11 & 12) and fax to PRIMUS Sales Department or to your local Sales Representative for a quotation. If you do not find an option or size listed to meet your requirements, please contact our Project Manager for additional information and assistance with a custom design.

Model Number Notation

SD = Single Door
DD = Double Door
↓

PSS - -M - -

↑ ↑ ↑

PSS5 Control = 5	AA	S = House Steam	Five models are offered: AA - 16" x 16" x 26" A - 20" x 20" x 38" B - 26" x 26" x 39" C - 26" x 26" x 49" D - 26" x 26" x 67" <i>A detailed formatted specification, suitable for inclusion in formal contract documents, is available on request.</i>
Pri-Matic = 6	A	E = Electric Boiler	
ControlLogix = 7	B	P = Steam to Steam	
Trinity Control = 8	C		
	D		

Note: Use the above format to determine PRIMUS Model number and insert below and on Page 15, Specification Worksheet.

PRIMUS General Purpose Steam Pressure Sterilizer, Model Number PSS_____.

SELECT CONFIGURATION

Door

- GDA - Single Door
- GDB - Double Door

Cabinet

- GCD - Panels Both sides
- GCCL - Left Side Panel
- GCCR - Right Side Panel
- GCE - Top Panel

Recessed

- GCA - One wall
- GCB - Two walls

Service and Equipment Access

- Left Side (Standard)
- Right Side

Steam Source

- | | | |
|--|---|---|
| <input type="checkbox"/> House Supply | <input type="checkbox"/> Clean Steam ^{2,3} | <input type="checkbox"/> Steam to Steam ² |
| <input type="checkbox"/> Electric Boiler ^{1,2,6} | <input type="checkbox"/> GEBC1 - 208/3 phase | <input type="checkbox"/> GSCS1 ⁴ - Pure Steam Dbl Tube |
| <input type="checkbox"/> GEB1 - 208/3 phase | <input type="checkbox"/> GEBC2 - 240/3 phase | <input type="checkbox"/> GSCS2 - Clean Steam Sgl Tube |
| <input type="checkbox"/> GEB2 - 240/3 phase | <input type="checkbox"/> GEBC3 - 480/3 phase | <input type="checkbox"/> GSCS3 ⁴ - Clean Steam Sgl Tube Sanitary |
| <input type="checkbox"/> GEB3 - 480/3 phase | <input type="checkbox"/> Other _____ | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Other _____ | | |
| <input type="checkbox"/> GEB0 ⁵ - Auto Blowdown | | |

1. Electric boilers are available in Carbon Steel or Stainless Steel. Carbon Steel Boilers are integral on AA, A and B sizes single door only. Additional options, if selected, may require stand-alone on these sizes. Specify whenever stand-alone is required on any model.
2. Contact PRIMUS for overall dimensions and utility connections.
3. All models are stand-alone.
4. GMP Validatable Option Only, sanitary piping required.
5. Low Water Cutoff is standard and the, " automatic reset" feature is disabled with this option. The boiler will need to be manually reset.
6. Water Quality - For best results, feed water supply should be evaluated prior to initial startup to ensure it is of the quality necessary for the application, various external treatment processes (water softner, water conditioning, etc.) may be used. Contact PRIMUS for further recommendations.

RESEARCH & LABORATORY CONFIGURATIONS

Clean Steam Sterilizers GP9

For cell/tissue culture applications. This option provides direct connection to a house-source of clean steam. Includes threaded stainless piping and components to chamber. If clean steam is the only steam source available, specify option GP9.1 for stainless piping to jacket. For alternate sources to generate clean steam, specify electric clean steam boilers (stainless steel), or when house steam is available, specify steam-to-steam generators. (Stainless steel heat exchanger).

GP9	Clean Steam to Chamber, SS Threaded Piping
GP9.1	Clean Steam to Jacket, SS Threaded Piping

Note: See Steam Source on previous page

Low Temperature Flowing Steam GP14

For media preparation, formula and similar uses. Pasteurization is accomplished with flowing steam. In addition to standard sterilizer temperature ranges, this option allows cycles to operate in the range of 168°F

(76°C) to 220°F (104°C). Not available when effluent configured sterilizer option GP8 is specified.

Note: GP14 not available if option GP8, Effluent Configured Sterilizer, is specified.

Air-over Cooling GP11

Provides a means of rapidly cooling sterilized load. Effective to decrease cycle times with liquid loads. Filtered ambient temperature air displaces steam under pressure during exhaust cycle to rapidly cool load and prevent boil-over.

Control Cycle on Load Temperature GC24

Used to establish the most beneficial cycle temperature and exhaust rate parameters. Monitors load temperature and controls the start of sterilization. Which will establish optimal parameters for liquid loads and for loads with complex load geometries and a difficult path for steam penetration.

Note: See additional Bio-Containment Options

CONTROLS AND RELATED OPTIONS

(Contact PRIMUS for details and performance specifications)

PSS500 Control GC6

PSS500 microcomputer with eight (8) cycles; seven (7) programmable and 1 preset Test cycle are standard. A vertical touchpad contains a Liquid Crystal Display (LCD) mounted on a side-mounted control panel with a thermal printer. Cycle progression is displayed by Light Emitting Diodes (LEDs) on the operator panel and printed, 32 characters per line printing. A second copy of the entire sterilization cycle printable at the end of the run. (If the reprint button is pressed on the printer, Cybertech Printer only.)

Standard cycles are configurable by modifying the cycle parameters for each. Two dedicated cycles are available for performing vacuum leak test and sterilizer filter. PSS7 is not available on Models AA and A.

PSS6 Pri-Matic® Control GC1

Pri-Matic® Control System uses the Allen-Bradley SLC 500 Programmable Logic Controller (PLC) with an Allen-Bradley Panel View 1000 Operator Interface Terminal (OIT) and the Pri-Matic® software package to provide automatic cycle operation. Pri-Matic® offers a total of fifteen cycles, with thirteen standard cycles available for product sterilization. Standard cycles are configurable by modifying the cycle parameters for each. Two dedicated cycles are available for performing vacuum leak test and sterilize filter. PSS6 is not available on Models AA and A.

PSS8 Trinity Control GCT

PSS800 microcomputer with a selection of twenty-five (25) separate programs for sterilization of wrapped goods, hard-goods liquids and test cycles. Trinity controller has a color touch-sensitive screen with 30 line x 40 character display on a side-mounted control panel with a thermal printer. Help screens for programming and trouble shooting alarm conditions. Cycle data can be printed, captured to a remote personal computer, or logged to memory.

PSS7 Control System GC1.1

PSS7 uses the Allen-Bradley ControlLogix Series 5555 PLC (Ethernet) and PanelView Plus OIT in place of the SLC500 PLC and standard PanelView. ControlLogix provides graphical color touch screen capability, real time process graph and the ability to standardize control systems throughout a facility. PSS7 offers a total of fifteen cycles, with thirteen standard cycles available for product sterilization.

PSS9 Control System GC1.2

PSS9 uses the Allen-Bradley MicroLogix™ 1400 PLC control and PanelView Plus™ 600 display monitor which provide a touch sensitive screen featuring color active matrix (TFT) 18 bit color graphics display and real time graph. Twenty-seven cycles, with 25 standard cycles available for product sterilization and two dedicated cycles for performing vacuum leak test and sterilizer filter. Help screens for programming and troubleshooting alarms. Messages displayed in complete phrases with no cross-referenced codes required. Cycle data printed, captured to a remote personal computer, or logged to memory. Security Access for Operator, Supervisor, Calibrator, Service and Administrator. Calibration provided through the operator end touch screen.

CONTROLS AND RELATED OPTIONS (Con't)

(Contact PRIMUS for details and performance specifications)

- Serial Data Output GC11**
Supervisory use to capture electronic record of each sterilization cycle. Cycle hard copy and display data is transmitted via RS232 in real time to a remote computer, up to 100 feet away, for display and recording. Hard copy records may be printed from the computer. Available on all control systems
- Authorized User Access GC32**
Restricts operation of sterilizer to authorized personnel and provides supervisor with PIN number of person running the cycle.
- Remote Mount Control Panel GC10**
Mount control panel in separate housing adjacent to or up to 35 feet away from the sterilizer. Available on all control systems.
- Display & Record in PSIA GC25**
Pressure values are displayed and recorded in pounds per square inch absolute in lieu of standard gauge pressure (PSIG).
- Thermal Printer GR7**
Thermal dot-matrix printer with take up reel and 32 characters per line printing is standard. Second sterilization cycle report available at the end of the run.

GMP VALIDATABLE CONFIGURATIONS

PRIMUS offers our Bio→Pharma® line of validatable sterilizers for Pharmaceutical applications. PRIMUS General Purpose sterilizers may be configured to be validatable, in accordance with the customer's specific requirements. To assure a compatible configuration is being specified, complete the worksheet and submit to PRIMUS Validatable Sterilizer Product Manager for review at validatable@primus-sterilizer.com.

BIO-CONTAINMENT OPTIONS

- Effluent Controlled Configuration GP8**
For use in high-risk biohazard applications including BSL-3 laboratories. All effluent is filtered or contained within the chamber until completion of the sterilization phase of the cycle. In addition to a specially designed chamber, GP8 option includes special components making it suitable for biohazard application. *Contact PRIMUS for details and performance specifications.*
- BioSeal Flange GV6**
Provides a means of isolating load from the unload ends of the sterilizer. A vapor-proof flange is welded to the vessel on both sides of the flange and around its full circumference. Penetrations through the flange for electrical and piping components are

secured with vapor proof fittings. For double-door pass-through Models AA, A and B requiring BioSeal Flange and a boiler, specify a stand-alone boiler.

- BioSeal Enhanced GV12**
Biological seal consisting of a sterilizer with bioseal flange integrated to a fully gasketed seal allowing for movement of the sterilizer, mechanically fastened by locking bars and bolts to SS panels attached to embedment's in building architecture providing a containment barrier. See your PRIMUS representative for specific details and requirements.
- Air Differential/Vermin Seal Extension Panels GV7**
Aluminum panels for attachment to, and extending from, the BioSeal Flange to adjacent building surfaces to complete the barrier between either end of the sterilizer.

	GV7	Air Differential/Vermin Seal, Aluminum
	GV10	Air Differential/Vermin Seal, Sealant, SS

- Compressed Air to Gasket GP10**
Compressed air, in lieu of steam, is used to seal gasket against door interior during cycles. Prolongs gasket life. Requires compressed air utility service or select option GEAC, Air-compressor.
- Remote Signaling of Sterilizer Status GC23**
Control relay connection enabling operation of a remote signaling device for an alarm condition. Alarm conditions many include Door Open, Door Closed and Cycle complete. Signal may be used to activate a buzzer, light or any other On-Off device.

GENERAL OPTIONS

- Validation Port, 1 inch GV3.1**
Provides chamber penetration to accommodate various monitoring/control probes. Standard on B, C, and D models, optional for Models AA and A.
- Seismic Restraints GV8**
Required in areas prone to seismic hazards. Secures sterilizer to building but allows for leveling. Designed to current California Code.
- Electric Vacuum Pump GP4**
This water-sealed electric vacuum pump provides an alternative means of drawing a vacuum, in lieu of the standard water ejector. Pump is side mounted Check PRIMUS' General Arrangement drawing to assure the required ancillary equipment space is provided.
- Drain Line Strainer/Valve GP25**
Provides a means to trap and expel debris from the chamber drain line to protect heat exchanger from damage.

GENERAL OPTIONS (Con't)

Power Operated Door GDF

On small size models, replaces standard manual fingertip door operation with hydraulic power operation actuated by mushroom-button switch mounted adjacent to chamber. An optional foot switch is available for single door units. Double Door Models include control panel pad actuation in lieu of mushroom button.

Air Compressor GEAC

For small size sterilizers, (less than 75 cu. ft.), air compressor mounted on sterilizer frame, for use when house supplied air is required but not available. Not available if Air-Over Option GP11 is specified.

UTILITY - RELATED OPTIONS

Boost Pump for Low House Water Pressure GP3

Delivers required dynamic water pressure for efficient operation. Requires specified GPM flow. *Contact PRIMUS for details and performance specifications.*

Step Down Transformers GE1

Reduces line voltage to required 110 VAC for operation of sterilizer controls.

GE1A	220 VAC to 110 VAC
GE1B	480 VAC to 110 VAC
GE1C	480/240 to 240/120 VAC, 1 phase, 0.5 KVA

Uninterruptible Power Supply GE2

In the event of electrical power loss and no emergency electrical power to sterilizer, this option provides electrical power to operate control system for up to 30 minutes, to complete the cycle. This option is dedicated power source for the electronics only and will not support any power requirements for

heavy power load components (boilers, pumps, compressors, etc.).

PRI-Saver Water Conservation System GP24

Decreases water usage up to 97% on steam sterilization cycles. PRI-Saver recirculates water through the reserve tank. This dramatically increases efficiency by reusing the water.

LOADING EQUIPMENT

Standard chamber shelving includes a fixed, removable, wire mesh bottom shelf. As an option an extendable bottom shelf, is available. Optional additional chamber shelf(ves) may be specified. *Shelving not applicable on Model D.*

Loading cart includes one bottom and one intermediate shelf with four adjustable levels. Additional shelves are available. Cart frames and shelves are 316L stainless steel welded, ground and polished. Shelf surfaces are stainless steel wire mesh. Transfer carriages include swivel casters with swivel locks and 5" wheels with wheel brakes.

GL1	Removable Bottom Shelf
GL2	Extendable Bottom Shelf
GL3	Additional Chamber Shelf
GL4	Loading Cart (n/a 16"x16"x26" Model)
GL5	Additional Cart Shelf
GL6	Transfer Carriage

NOTE: Loading cart and transfer carriages are recommended for chamber lengths 48 inches or longer.

Contact PRIMUS for special loading equipment requirements. Existing loading equipment may be able to be retained, contact PRIMUS for more information.

SHIPPING DIMENSIONS, CUBAGE & WEIGHTS

Model Sterilizer Size inches/millimeters	AA 16" x 16" x 26" 406.4 x 406.4 x 660.4	A 20" x 20" x 38" 508 x 508 x 965.2	B 26" x 26" x 39" 660.4 x 660.4 x 990.6	C 26" x 26" x 49" 660.4 x 660.4 x 1244.6	D 26" x 26" x 67" 660.4 x 660.4 x 1701.8
Overall Dimensions, of Frame	25 x 73 x 32-1/2 635 x 1854.2 x 825.5	28-3/4 x 73 x 45 730.25 x 1854.2 x 1143	35-1/2 x 79 x 50 901.7 x 2006.6 x 1270	35-1/2 x 79 x 60 901.7 x 2006.6 x 1524	35-1/2 x 79 x 78 901.7 x 2006.6 x 1981.2
Weight, Single Door	CONTACT PRIMUS FOR WEIGHTS				
Weight, Double Door	CONTACT PRIMUS FOR WEIGHTS				
Crated Weight (Additional)	200 lbs/ 91 kg	200 lbs/ 91 kg	200 lbs/ 91 kg	200 lbs/ 91 kg	200 lbs/ 91 kg
Crated Dimensions	43 x 81 x 47 1092.2 x 2057.4 x 1193.8	47 x 81 x 59 1193.8 x 2057.4 x 1498.6	61 x 84 x 61 1549.4 x 2133.6 x 1549.4	61 x 84 x 71 1549.4 x 2133.6 x 1803.4	61 x 84 x 89 1549.4 x 2133.6 x 2260.6
Crated Cube	95 cu ft/ 3m ³	130 cu ft/ 4 m ³	181 cu ft/ 5 m ³	211 cu ft/ 6 m ³	264 cu ft/ 8 m ³
Loading Equipment	N/A	124 lbs/ 56kg	153 lbs/ 69 kg	175 lbs/ 79 kg	246 lbs/ 112kg
Boiler	175 lbs/ 79 kg	175 lbs/ 79.38 kg	S.D 250 lbs/ 113.4 kg ¹ D.D 370 lbs/ 167.8 kg ²	375 lbs/ 170 kg	450 lbs/ 204 kg

1. Integral Boiler
2. Stand Alone

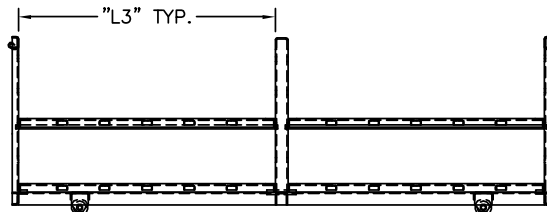
LOADING EQUIPMENT (con't)

Transfer Carriage and Loading Cart Dimensions¹

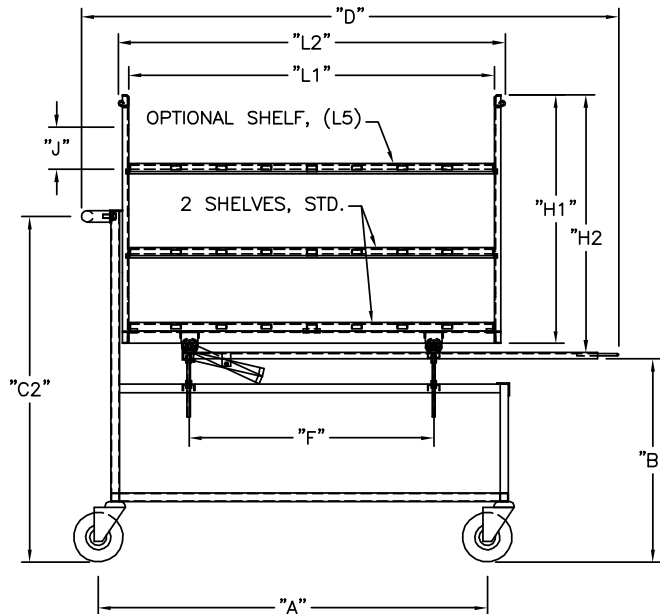
CHAMBER SIZE	CARRIAGE QTY	CART QTY	A	B	C1	C2	D	E	F
AA-16"x16"x26"	N/A	N/A							
A - 20"x20"x38"	1-L6	1-L4	37.18"	38.50"	55.63"	48.06"	54.00"	19"	34.50"
B - 26"x26"x39"	1-L6	1-L4	38.25"	32"	53.63"	41.06"	55.00"	21"	35.50"
C - 26"x26"x49"	1-L6	1-L4	48.25"	32"	53.63"	41.06"	65.00"	21"	45.50"
D - 26"x26"x67"	1-L6	1-L4	65.25"	32"	53.63"	41.06"	82.38"	21"	48"

Transfer Carriage and Loading Cart Dimensions Cont'd

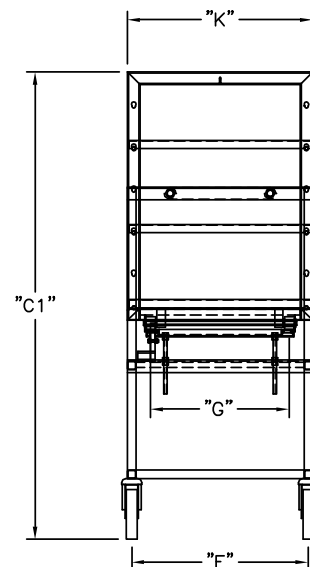
CHAMBER SIZE	CARRIAGE QTY	CART QTY	G	H1	H2	J ²	K	L1	L2	L3
AA-16"x16"x26"	N/A	N/A								
A - 20"x20"x38"	1-L6	1-L4	13.50"	15"	16.38"	3"	18"	33"	36"	N/A
B - 26"x26"x39"	1-L6	1-L4	16.50"	19.50"	20.88"	4"	24"	34"	37"	N/A
C - 26"x26"x49"	1-L6	1-L4	16.50"	19.50"	20.88"	4"	24"	44"	47"	N/A
D - 26"x26"x67"	1-L6	1-L4	16.50"	19.50"	20.88"	4"	24"	62.50"	65"	30.50"



SIDE VIEW (60" CHAMBER OR LONGER)



SIDE VIEW



END VIEW

The PRIMUS Difference:

- Quality and Innovation – Dedicated to sterilizers for over 25 years.
- Steam Sterilizers are Our Only Business – Proud to be the only major steam sterilizer manufacturer specializing in Steam Sterilizers
- ASME Certified Pressure Vessel Factory – Being the owner of our ASME shop ensures highest of quality and faster deliver times
- USA Designed and Manufactured
- 19 Standard Sizes, Custom Sizes Available
- Steam Sterilizer for Every Need – From Basic Sterilization to Hazardous Waste, to Validatable Pharmaceutical and Bio-Critical Applications
- Engineered the Service Out of Sterilizers – “Making it one of the easiest in the industry to service” per our Authorized Service Agents and Customers
- Simplicity of Design – less parts to fail
- Non-Proprietary Components – Lowers the cost of ownership, minimizes down time and provides a more efficient meantime repair
- 304L Stainless Steel Fully Jacketed Vessel (no laminates) – reduces heat-up time and loss of temperature, providing greater uniformity of chamber temperature
- Rectangular Chamber - eliminating wasted space and high utility cost
- Sliding Doors: Inherently safe doors – seal integrity. Not a burn hazard
- PRIMUS Controls with “Evergreen Migration” meaning the hardware and software is continually supported lowering total costs of ownership – All controls offer multiple options on 4 different control platforms. Through constant improvements and development PRIMUS Controls remain a leader in the industry. Simple to operate, reliable and versatile.
- Vacuum, Gravity, Liquid and Test Cycles - Standard on all Sterilizers
- Pri-Mirror® Chamber Finish – Most sanitary in the industry. Providing a mirror finish of <10 Micro Inches Ra, the result is a non-porous surface easy to clean and hostile to microorganism
- Independent Dealers, Sales Representatives and Authorized Service Agents Worldwide – offering the most coverage and flexibility
- Customer Service - Important part of PRIMUS offered through our Authorized Service Agents or directly from PRIMUS’ Service Department
- Turn Key Operation – from planning to installation to start-up and training
- FDA, ISO 9001:2000, ISO13485-2003; UL Listed, ASME Section VIII Division I, Health Canada License

PRIMUS sterilizers represent state-of-the-art technology, built to the highest standards thanks to employees who have a strong work ethic and dedication to craftsmanship. Quality products and personal service is first and foremost with PRIMUS.

PRIMUS has earned a reputation for offering the premier sterilizer on the market!



**“PRIMUS Sterilizer...
...Quality by Design, Excellence by Choice”**



**26" x 26" x 39" with loading
cart
and transfer carriage**



**26" x 26" x 39"
with Pri-Matic® Controls**



**26" x 26" x 39"
with PSS500 Controls**

**QUALITY AND INTEGRITY FORM THE FOUNDATION OF
PRIMUS STERILIZER COMPANY**

**OUR VISION FOR CONTINUAL IMPROVEMENT IS REALIZED
THROUGH THE ESTABLISHMENT OF QUALITY OBJECTIVES
ACHIEVED THROUGH TEAMWORK WITH A GOAL OF
RETURNING SIGNIFICANT VALUE TO OUR CUSTOMERS.**

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PRIMUS Specification Data Worksheet

Complete the following by selecting the options or transferring those checked on preceding pages, required to meet your needs. Tear off and forward completed worksheet to PRIMUS Sales Department, fax 402-344-4251, or your local PRIMUS Representative. If you do not find an option or size listed to meet your requirement, please contact our Sales Department for additional information and assistance with a custom design to meet your specifications.

PRIMUS MODEL NUMBER		QUANTITY	
PROJECT NAME			
PROJECT ADDRESS			
COMPANY NAME		PHONE	
CONTACT NAME		FAX	
CONTACT EMAIL			
SPECIFICATION SECTION		ITEM NO.	
SHOWN ON DRAWING NO.		ROOM NO.	
PRIMUS QUOTE NO.			

GENERAL CONFIGURATIONS

GDA	Single Door
GDB	Double Door
GDG	Foot Operated Auto Door (Single Door)
GDE	Door(s) Manually Operated (Std)
GCD	Cabinet, 2 sides
GCCL	Cabinet, 1 Side Left
GCCR	Cabinet, 1 Side Right
GCA	Recessed, 1 Wall
GCB	Recessed, 2 Wall
NPN	Left Side Service (Std)
GC30	Right Side Service Access & Control
GC31	Control Panel Opposite Side of Service
GCE	Top Panel
GCF	Rear Panel

STEAM SOURCE

GEB1	Boiler, 208/3ph
GEB2	Boiler, 240/3ph
GEB3	Boiler, 480/3ph
GEB3C1	Clean Steam, 208/3ph
GEB3C2	Clean Steam, 240/3ph
GEB3C3	Clean Steam, 480/3ph
GSCS1 ³	Pure Steam Double Tube, Sanitary
GSCS2	Clean Steam Single Tube
GSCS3 ³	Clean Steam Single Tube, Sanitary
GEBO	Automatic boiler blow-down

RESEARCH & LABORATORY OPTIONS

GP9	Clean Steam to Chamber, SS Threaded Piping
GP9.1	Clean Steam to Jacket, SS Threaded Piping
GP14	Low Temperature Flowing Steam
GP11	Air-Over Cooling
GC24	Single Load Probe

CONTROLS & RELATED OPTIONS

GC6	PSS500 Control (Standard)
GCT	PSS8 Trinity Control
GC1 ³	PSS6 Pri-Matic® Control System (N/A on Models AA and A)
GC1.1	PSS7 ControlLogix Control System (N/A on Models AA and A)
GC1.2	PSS9 MicroLogix™ Control System

CONTROLS & RELATED OPTIONS (con't)

GC11	Serial Data Output
GC32	Authorized User Access
GC10	Remote Mount Control Panel
GC25 ¹	Display/Print PSIA
GR7	Thermal Printer, 32 Character (Std)

BIO-CONTAINMENT OPTIONS

GP8	Effluent Sterilization Configuration
GV6	One BioSeal Flange (not available on double door models, if integral boiler specified)
GV7	Air Differential/Vermin Seal, Aluminum
GV10	Air Differential/Vermin Seal, Sealant, SS
GV12	BioSeal Enhanced
GP10	Compress Air to Gasket
GC23	Remote Alarm Signal

GENERAL OPTIONS

GV3.1	Validation Port, 1.0" diameter
GV8	Seismic Restraint
GP4	Electric Vacuum Pump
GP25	Drain Line Strainer/Valve
GDF	Power Operated Door
GEAC	Air Compressor

UTILITY - RELATED OPTIONS

GP3	Boost Pump for Low House Water
GE1A	Step Down Transformer from 220V to 110V
GE1B	Step Down Transformer from 480V to 110V
GE1C	Step Down Transformer from 480/240 to 240/120V, 1 ph, 0.5KVA
GE2	UPS maintains sterilizer operation for 30 minutes during power outage
GE3	GFI Receptacle
GP24	PRI-Saver Water Conservation System
GP30	PRI-Pure Reverse Osmosis System

- 1. PSS500 Control Only
- 2. Pri-Matic® Control Only
- 3. Validatable Option Only
- Std = Standard Component
- SS = Stainless Steel
- CIP = Clean-in-Place
- N/A = Not Available

Specification Data Worksheet (con't)

LOADING EQUIPMENT	
GL1	Removable Bottom Shelf (Std)
GL2	Extendable Bottom Shelf
GL3	Additional Chamber Shelves
GL4	Loading Cart (N/A on 16"x16"x26")
GL5	Additional Cart Shelves (N/A on 16"x16"x26")
GL6	Transfer Carriage (N/A on 16"x16"x26")
OTHER CONTROL OPTIONS	
GC2 ³	Pri-Matic® F ₀ control F ₀ accumulated, 4 points
GC5 ³	Conax Adaptor
GC7 ^{2,3}	Second PanelView 1000 w/ DH+
GC8 ^{2,3}	SCADA Data File
GC9 ¹	Display Centigrade
GC12	Chamber Condensate Alarm
GC13 ^{2,3}	Sterilize Filter as a Cycle.
GC14 ^{2,3}	WFI Interface
GC15 ^{2,3}	Pri-Matic® in NEMA 12 enclosure (Dustproof)
GC15.1 ³	Stainless Steel Enclosure for Pri-Matic Control Panel
GC16 ^{2,3}	Pri-Matic® mounted in NEMA 4 Enclosure (Waterproof)
GC16.1 ^{2,3}	Pri-Matic® mounted in NEMA 4X SS Enclosure
GR1	Impact Printer, Flush Mount 24 Col.
GR3 ³	Strip-Chart Recorder
GR4	Thermal Printer, Take-up Reel
GR4.1	Thermal Printer, Flush Mount 24 Col.
GR5 ³	Circular Chart Recorder

- 1. PSS500 Control Only
- 2. Pri-Matic® Control Only
- 3. Validatable Option Only
- Std = Standard Component
- SS = Stainless Steel
- CIP = Clean-in-Place
- N/A = Not Available

OTHER CONTROL OPTIONS (con't)	
GC17 ³	Sterilizer "OFF" Signal
GC18 ³	Sterilizer "In-Cycle" Signal
GC19	Chamber Drain Temperature, Remote Digital Display
GC23	Remote Alarm Signal
GC26 ^{2,3}	PanelView 550, Service Area
GC27 ^{2,3}	PanelView(s) Color
GC28 ^{2,3}	Ethernet PLC
GC33 ¹	Automatic Vacuum Leak Rate Test
GC36	Ethernet Connection
GC37	Form C Dry Contacts
OTHER PIPING OPTIONS	
GP1	Heated Air-In, Heat Exchanger SS
GP2	Heated Air-In, Heat Exchanger Non-SS
GP5 ³	Safety Valve Over Rupture Disk
GP7 ³	Condensate Sampling Valve
GP13	Precise Temperature Control +/- .5°C (S3)
GP15 ³	CIP Piping for Sanitary Chamber
GP16 ^{2,3}	Air to Jacket Cooling
GP18 ³	Passivate Chamber
GP19 ³	Passivate Chamber and Piping
GP20 ³	Steam Quality Sampler
GP21 ³	Adapters, Sanitary to Threaded
GP24	Water Recirculation Conservation System
VESSEL OPTIONS	
GV1	Stainless Steel Frame
GV2	Jacket Type, 316 L SS
GV3	Jacket Insulation Cover, SS
GV6.1	Additional BioSeal Flange (N/A 16x16, 20x20, 26x26x39)
GV8	Seismic Restraints
GV9 ³	Chamber Welds Ground and Polished
GV10	BioSeal Panels, Stainless
GV12 ³	Additional Validation Port
GC3 ³	Blind Flange Assembly, Sanitary fittings
GC4	Jacket Pressure Display, Analog
GMP DOCUMENTATION OPTIONS	
GD1 ³	GMP Validation Documentation
GD2 ³	IQ/OQ Protocol, PSS500
GD3 ³	IQ/OQ Protocol, Pri-Matic®

YOUR LOCAL PRIMUS REPRESENTATIVE:

FOR ADDITIONAL ASSISTANCE

To discuss your sterilization design needs, please contact PRIMUS.



Manufacturer reserves the right to modify materials or specification without notice.



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