



Steelco

VS L Series Steam Sterilizers for Laboratory & Biomedical Research

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ANIMA  **LAB**

Customization. Innovation. Excellence.

Driven by customer needs

Steelco is a leading infection control solution provider, supplying the healthcare, laboratory research and pharma sectors. Active in over 100 countries, Steelco has equipped numerous world renowned hospitals and counts among its customers household names in the laboratory, pharmaceutical and industrial sectors.

Driven by customer feedback, Steelco develops, manufactures and supplies solutions that maximize infection control, safety, optimize processes and minimize costs. Already a leader in innovation in areas such as automation, the integration within the Miele organization has provided additional boost in technological development.

Steelco provides technical service and user training courses at the Steelco Academy as well as at customer sites.

Our optional remote diagnostics capabilities and worldwide team of factory trained engineers ensure that you receive the service support you need to cost effectively maximize the uptime of your equipment.



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Steelco steam sterilizers for any size of facility

Whether you are just wishing to replace a single small machine or require assistance in designing and equipping your scientific or research laboratory, Steelco and its factory-trained dealers are here to help you make the best possible decision that works for you and then support you every step of the way.

High-performance, reliability, and versatility characterize our sterilizing autoclaves, which are suitable for any size of facility thanks to their extensive range.

Steam sterilizers VS L Series meet the following standards requirements: 2006/42/CE (Machinery Directive); 2014/30/EU (EMC Directive); 2014/68/UE (PED)

Additional technical norms and standards (according to country of destination and customer requirements): IEC 61010-2-040; EN ISO 12100; EN 61326; EN 13445; EN ISO 9712; EN ISO 9606-1; EN ISO 15614-1; ASME code Sec.VIII div. 1 & div. 2; UL compliant; EN 285 (available upon request).

A wide range of models and configurations for your laboratory



VS L Small & Medium Range

Automatic sliding or manual hinged door, single or double door version.

Chamber Volume

from 110 litres / 4 cu ft
to 1344 litres / 47 ½ cu ft

VS L Bulk Range

Automatic sliding or manual hinged door, single or double door version.

Chamber Volume

from 2,040 litres / 72 cu ft
to 9070 litres / 320 cu ft

VS LD

Compact vertical loading sterilizer

Chamber Volume

from 85 litres / 3 cu ft
to 125 litres / 4.42 cu ft

Laboratory applications

With up to 11 standard chamber sizes, Steelco VS L range of small and medium steam sterilizers is designed to satisfy any laboratory and research facility need.

Mainly used to sterilize heat-resistant and moisture-stable materials (e.g. glassware, metal parts, liquids in sealed or vented containers, porous loads, etc.) autoclaves can also reprocess biohazardous material. In their double door version, steam sterilizers play a key role as part of the building containment system in biosafety level laboratory applications (BSL-3 and BSL-4).



Typical loads



Glassware and solid materials



Porous materials



Liquid in open or sealed containers



Biohazardous materials

Related washing system

Glassware washers

Our complete range of glassware washers and dryers, carefully designed to effectively treat daily use materials in scientific laboratories, provides optimum cleaning/drying and maximum safety, ensuring unrivaled levels of efficiency. Tailor-made custom options, combined with a wide selection of trolleys and accessories, meet the most diverse treatment needs.



Animal lab applications

Pass-through autoclaves provide the primary barrier and access control that separates the controlled animal care environment from external influences.

Steam sterilizers can be necessary to provide sterilized items into specific operational areas or to dispose of potentially infectious or genetically modified material from specific operation areas to the outside. To maximize throughput, large bulk autoclaves are used in vivarium facilities to sterilize cages, feeding bottles, bedding, animal feed, and biohazardous goods such as waste or animal carcasses.



Typical loads



Animal cages



Bedding and feeding



Feeding bottles & Liquids



Waste and carcasses

Related washing system

Cage and bottle washers

Carefully designed to wash and sanitize all types of animal care equipment of your vivarium or laboratory – cages, feeding bottles, and fish tanks – our range of cabinet washers not only offers the highest flexibility of installation while minimizing operating costs, but also the highest levels of cleaning efficacy.



High Quality Design & Performance coming together



Flexible configuration

Single and double door pass through, manual hinged or automatic spacesaving sliding door. The electrical cabinet can be integrated within the skid of the unit or remotely installed. The technical area can be on the right or left side; alternatively, it can be shared in the case of "inline" installation of a pair of machines. Configuration and installation type may vary according to model and options chosen.



Chamber, jacket and doors

Chamber and internal door(s) made of AISI 316L solid stainless-steel with $Ra < 2 \mu m$ ($Ra < 80 \mu$ inch) in finish with no welding. Rectangular chamber cross section and full jacket double-wall design made of stainless steel AISI 304L. The door gasket is made of silicone and can be compressed air (standard) or steam (option) activated. An interlock system prevents door(s) from opening unless adequate conditions are met: temperature, pressure, completion of the cycle, opposite door closed.



Piping and valves

As standard, Steelco VS L range is provided with process piping and pneumatic valves in copper-brass. Upgrade to AISI 316L stainlesssteel piping and valves for clean steam application is available. Pneumatic valves require compressed air from building or onboard/remote air compressor. Alternatively, on small and medium range, solenoid valves can be installed in lieu of pneumatic valves.





Steam feeding options

Equipped as standard with direct clean steam supply from building. Multiple options of on-board steam generators in AISI 316L stainless steel are available upon request*:

- Electric steam boiler
- Steam-to-steam boiler for clean steam application
- Combined functioning: building steam/electrical boiler

(*) Steam generator not available for VS L Bulk range



Air removal

Air must be removed before any steam sterilization cycle. The vacuum system is the recommended method to sterilize goods which are difficult for steam to penetrate or with a long drying period. Steelco sterilizers are equipped as standard with a water ring vacuum pump. A water ejector can be installed upon request.



Temperature probes

Temperature probes installed in chamber drain and jacket to monitor temperature variations during the cycle. One single load probe inside the chamber. As option, a second test port ready for either end-user's thermocouple or additional load control probe is available.



Jacket cooling & Air over pressure

The air-over-pressure function is ideal for liquid cycles as it prevents boil-over by injecting pressurized air to cool down the load while maintaining pressure to displace steam. During the cooling phase, cold softened water enters the jacket to speed up the cooling process. Jacket cooling requires chilled softened water from the building and is available with or without recirculation.



Efficiency & Sustainability

water saving options

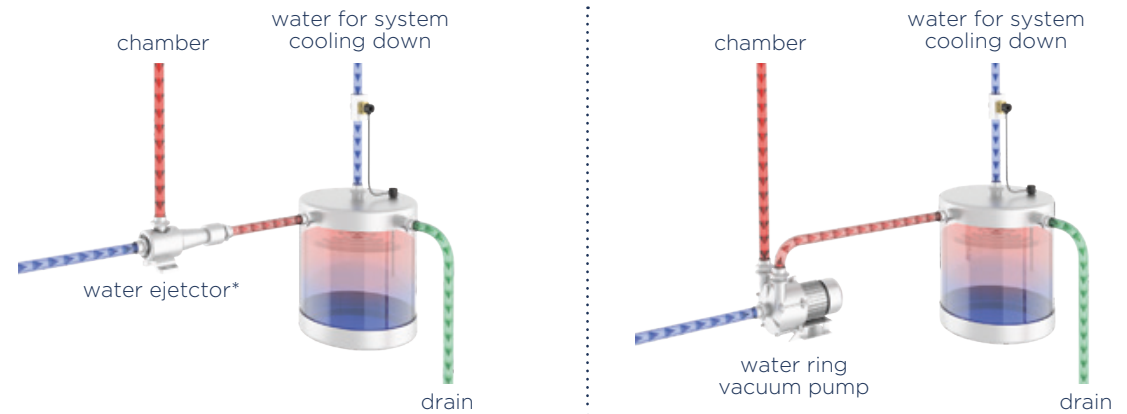
Even though Steelco sterilizers are already efficient compared to corresponding competitor models, equipping them with a state-of-the-art ECO technology provides unrivaled efficiency levels, reducing energy and water consumption with the lowest operating costs per load.

Water usage can be significantly reduced to less than one-tenth, assisting our customers in their sustainability goals.

ECO CD - Cool down system

Included as standard

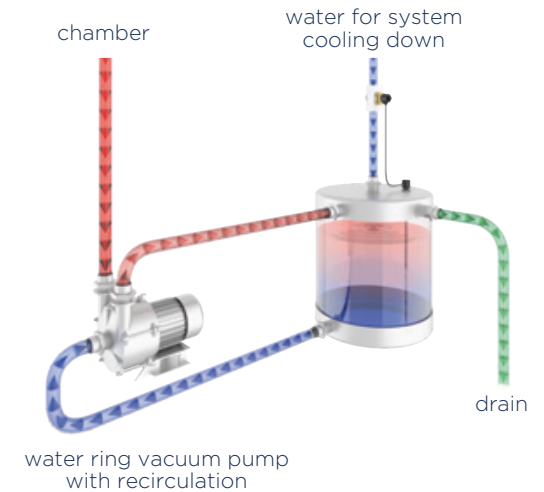
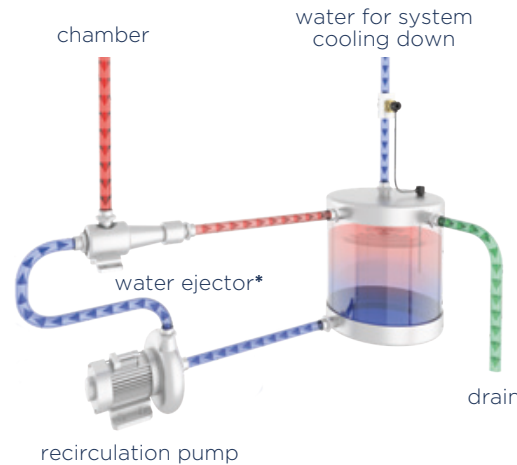
This system consists of a tank that collecting both chamber and condensate drains. Temperature within the tank is controlled by a thermostatic valve and drain temperature is kept below 60°C (140°F) prior to discharge by adding cold water from building.



ECO EVO

Available as option

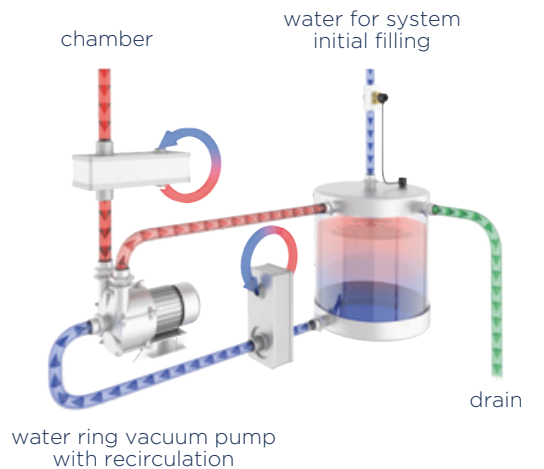
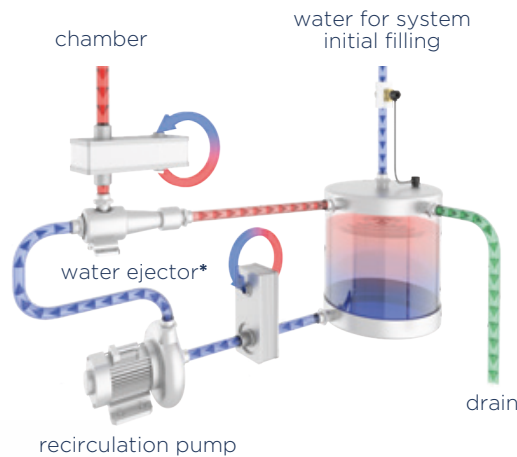
The system consists of a tank that collects both chamber and condensate drains. Collected water is re-circulated to feed vacuum systems. Water temperature within the tank is controlled by a thermostatic valve by adding cold water from building. Added water is triggered according to vacuum systems need and drain temperature is kept below 60°C (140°F) prior to discharge.



ECO EVO PLUS

Available as option

The system consists of a water tank that collects both chamber and condensate drains. Collected water is re-circulated to feed vacuum systems. Water temperature within the tank is controlled by a thermostatic valve and the system exchanges heat with a chilled water loop from building. Water is added mainly for system start-up, thus reducing water consumption to nearly zero (-90%). Drain temperature is kept below 60°C (140°F) prior to discharge.



(*) Water ejector not available for Bulk Range

Advance Control System to check the entire process

Touch-screen HMI

The control system consists of an industrial PLC with a 7" color touch-screen panel with input/output modules and an Ethernet port. A thermal printer is integrated into the main control panel.

Based on sterilizer model/configuration, different HMIs are available:

- Allen Bradley display, positioned on top of the chamber
- Saia HAKKO display, positioned on side of the chamber
- Siemens display, positioned on side of the chamber. Available as option to comply with 21 CFR Part 11.

User-friendly interface

The high-quality colour touch display, in combination with Wi-Fi and Ethernet connection, ensures intuitive operator interaction and excellent control over the entire process.

In addition, SteelcoData Live allows remote visualisation of both real-time and historic device performance data.

Tele-service & Tablet connectivity ready

Connection for remote monitoring for troubleshooting directly from factory. Tablet connectivity requires access connection to client's network and Wi-Fi connection.



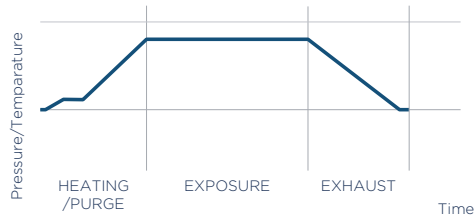
Cycle configuration

To match your process needs

Standard cycles

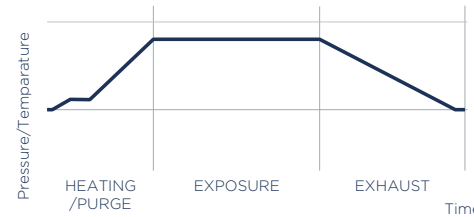
Gravity

For the sterilization of heat- and moisture-stable goods and the decontamination of bagged non-biohazardous laboratory waste.



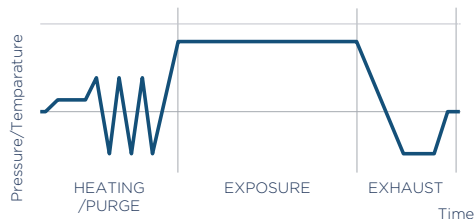
Liquid

For the sterilization of liquids and media in vented borosilicate glass or metal containers. Temperature 121°C/249.8°F.



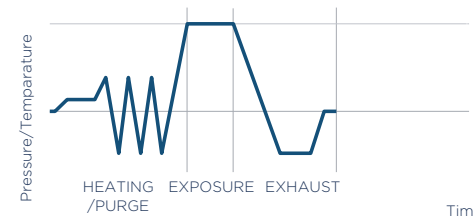
Pre & Post vacuum 121°C/249.8°F

For efficient, high-volume sterilization of heat-sensitive materials (plastic, rubber products and macrolon cages).



Pre & Post vacuum 134°C/273.2°F

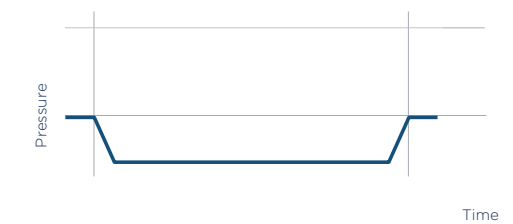
For efficient, high-volume sterilization of porous, heat- and moisture-stable materials (utensils, glassware, textiles).



Test cycles

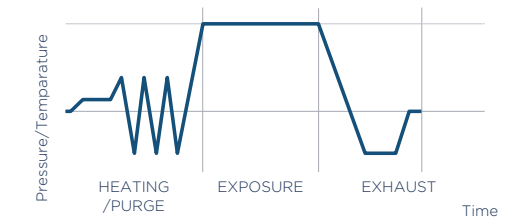
Leak Test

This cycle is used to verify the vacuum integrity of the sterilizer. While running this cycle, the sterilizer chamber must be empty.



Bowie-Dick (D.A.R.T.)

This cycle is used to verify the effectiveness of both steam penetration and air removal in sterilizers provided with a vacuum pump.



Optional cycles

Steelco can provide completely new cycles to meet customer needs.

- + Jacket cooling with direct injection of cold water
- + Jacket cooling with water recirculation system
- + Air over pressure with jacket cooling cycle
- + Low temperature cycle
- + F₀ function

Biocontainment Solutions for BSL laboratories

A biosafety level (BSL) is a set of biocontainment precautions required to isolate dangerous biological agents in an enclosed laboratory facility. Biosafety levels go from 1 to 4, where 4 is required for work with dangerous and exotic agents that pose a high risk of aerosol-transmitted laboratory infections and life-threatening disease.

In all BSL laboratory applications, especially at higher BSL levels, steam sterilizers play a key role as part of the building containment system. Double door sterilizers act as a pass-through between hot and cold zones (or sterile and non-sterile zones) and must be sealed to the wall to form a crosscontamination barrier.

For any sterilization cycle in BSL-3 or BSL-4 facilities, there are two conditions that need to be addressed from a containment standpoint:

- the air evacuation phase;
- the steam bleed during the sterilization dwell period.

It is during these conditions where potentially harmful pathogens and/or viruses can be emitted to the building drain system and/or the surrounding environment.

Biocontainment solutions can be paired with effluent decontamination solutions to reduce cross-contamination probability to zero.





Air differential seal

It provides a solid AISI 304 stainless-steel flange bolted to the sterilizer body, and stainless-steel panels inserted between the flange and the building structure such as ceiling, floor, and walls. All panels are tightly fitted to their adjoining surfaces with seams filled with silicone. The air differential seal can be made in a single piece (Not dismountable) or in different pieces (Dismountable).



Bioseal

This solution includes two stainless-steel 304 flanges - one fixed or welded to the chamber and a second one fixed to the building structure. Flanges are connected via long-life flexible gasket to ensure the complete airtightness. If there are any leaks through the screw holes, leaks remains into the contaminated area.



Effluent Decontamination Feature

To prevent harmful pathogens and viruses from exiting the sterilization chamber during the exhaust and vacuum phases, the condensate produced during the processing cycle is decontaminated before discharge to the drain. The drain is controlled by an hydrophobic 0.22 μm (8 μinch) filter and both filter and condensate are sterilized during the cycle.



Additional Features

To increase safety and avoid the risk of release of non-sterile and unfiltered fluids, Steelco offers several additional safety features:

- + Additional filter for effluent decontamination
- + WIT set-up for external or automatic filter integrity test
- + Bypass for effluent decontamination filter
- + Drain separation for decontamination feature
- + Incinerator for effluent decontamination.



Ergonomics & Logistics

multiple loading options



Loading car and carriage

Loading cars are made of AISI 316 stainless steel. Shelf supports are adjustable for load height adjustment. The fixed height loading carriage, made of AISI 304 stainless steel, is provided with a safety lock that avoids the car to accidentally fall off; the same system is used to lock the loading carriage to the sterilizer.

Sliding shelves in lieu of car and carriage

Steelco enables choosing an easy sliding-shelves system in lieu of car and carriage. The fixed rack with perforated shelf supports (2 or 3 shelves depending on model) is mounted on each side of the sterilizer's chamber walls. The sliding shelf supports, made of AISI 316 stainless steel, are adjustable for load height adjustment. Not available for Medium VS 264175 L model and Bulk range.

Floor loading trolleys for pit-mounted installations

For pit-mounted bulk autoclaves, Steelco offers a wide range of floor loading trolleys made of AISI 316 stainless steel and equipped with autoclavable wheels. According to model and chamber depth, for easy handling, trolleys can be single or divided into two separate sets.





VS LD Series

Compact Vertical Loading Sterilizer



The VS LD Series of vertical loading autoclaves answers the specific sterilization needs of a modern laboratory. Free-standing and compact, these devices efficiently use space to minimize operating cost while maximizing cleaning performance.

High-quality design - both hinged door and sterilization chamber in AISI 316L stainless steel - ensures both durability and ease of cleaning.

Featuring 121°C / 249.8°F and 134°C / 273.2°F cycles as well as service programs.

A water ring vacuum pump - for efficient pre-vacuum air removal and post-vacuum - and chamber jacket heating - to cut down cycle time and enhance the drying phase of solid loads - are available upon request.

VS LD Series is equipped with a PLC digital microprocessor and a user-friendly touch screen HMI panel.

VS 9 LD

Chamber Volume

~ 85 lt / 3 cu ft

Chamber Dimensions

Ø 420 x H=636 mm

Ø 16.5 x H=25 inches

VS 13 LD

Chamber Volume

~ 125 lt / 4.42 cu ft

Chamber Dimensions

Ø 420 x H=896 mm

Ø 16.5 x H=35.27 inches

Key Features:

- + Chamber and process piping made of AISI 316L stainless steel
- + Hinged door with sliding cover and pneumatic pistons for easy and effortless operation.
- + Frame and external panels made of AISI 304 stainless steel
- + Lockable antistatic castors
- + Built-in electrical steam generator
- + Water ring vacuum pump
- + Chamber jacket heating and cooling
- + Chamber and load control probe
- + Effluents cooling system
- + 7" HMI color touch screen with industrial PLC
- + On-board thermal printer
- + 400V/3-/50Hz standard electrical connection; alternative connections available





Cycle development

VS LD series is equipped with a PLC digital microprocessor and a user-friendly 7" touch screen panel HMI.

Various equipment and cycle options to meet the needs of a wide range of applications.



Independent pressure probe

A pressure reference transducer allows the recording of pressure during the cycle. An alarm is activated if the value on the control probe differs from the reference probe more than the defined tolerance.



Loading Accessories

Lifting device with electronic control and swivel arm for fully assisted loading/unloading with the easy handling of all load types. Several types and dimensions of loading baskets are available to optimize loading capacity.

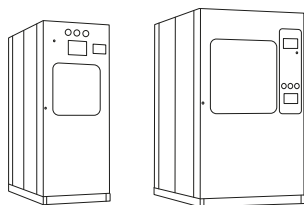


Capacity & Dimensions

Model	Capacity liters/ft ³		Chamber dimensions			Overall dimensions			
			Ø	Height	Width	Height	H with open door	Depth	
VS 9 LD	liters	90	mm	420	636	720	1000	1467	723
	ft ³	3 1/6	inches	16 9/16	25 1/16	28 3/8	39 3/8	57 3/4	28 7/16
VS 13 LD	liters	125	mm	420	896	720	1235	1702	723
	ft ³	4 2/5	inches	16 9/16	35 1/4	28 3/8	48 5/8	67	28 7/16

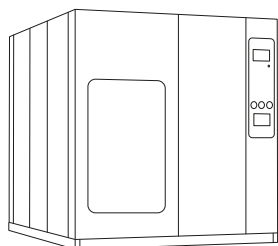
Capacity and dimensions

VS L Small Capacity range



Model	Door Opening	HMI position	Capacity	Chamber dimensions mm/in			Overall dimensions			
				Width	Height	Depth	Width (Sliding door)	Width (Hinged door)	Height	Depth
VS 161626 L	Hinged or Vertical Sliding	On top	110	406	406	660	635	870	1842	965
			4	16	16	26	25	34 ¼	72 ½	38
VS 202038 L	Hinged or Vertical Sliding	On top	250	508	508	965	737	972	1842	1270
			9	20	20	38	29	38 ½	72 ½	50
VS 262639 L	Hinged or Vertical Sliding	On top	432	660	660	991	889	1125	1995	1296
			15	26	26	39	35	44 ½	78 ½	51
VS 262839 L	Vertical Sliding	On Side	462	670	700	986	1100	Not Available	1900	1292
			16 ½	26	28	39	43 ½	75	51	
VS 262649 L	Hinged or Vertical Sliding	On top	542	660	660	1245	889	1125	1995	1550
			19	26	26	49	35	44 ½	78 ½	61
VS 262851 L	Vertical Sliding	On Side	603	670	700	1286	1100	Not Available	1900	1592
			21 ½	26	28	51	43 ½	75	62 ½	
VS 262661 L	Hinged or Vertical Sliding	On top	676	660	660	1549	889	1125	1995	1854
			24	26	26	61	35	44 ½	78 ½	73
VS 262861 L	Vertical Sliding	On Side	745	670	700	1586	1100	Not Available	1900	1892
			26 ½	26	28	61	43 ½	75	74 ½	

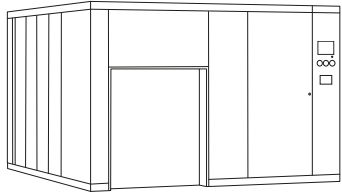
VS L Medium Capacity range



Model	Door Opening	HMI position	Capacity	Chamber dimensions			Overall dimensions					
				Width	Height	Depth	Sliding door			Hinged door		
				Width	Height	Depth	Width	Height	Depth	Width	Height	Depth
VS 263639 L	Hinged or Sliding door	On Side	600	660	914	991	1860	1765	1275	1426	1709	1354
			21 ½	26	36	39	73 ¼	69 ½	50 ¼	56 ¼	67 ¼	53 ¼
VS 263649 L	Hinged or Sliding door	On Side	750	660	914	1245	1860	1765	1530	1426	1709	1608
			26 ½	26	36	49	73 ¼	69 ½	60 ¼	56 ¼	67 ¼	63 ¼
VS 263660 L	Hinged or Sliding door	On Side	920	660	914	1524	1860	1765	1810	1426	1709	1888
			32 ½	26	36	60	73 ¼	69 ½	71 ¼	56 ¼	67 ¼	74 ¼
VS 264151 L	Horizontal Sliding	On Side	905/922*	670	1050	1286/1310*	1860	1900	1592	Not available		
			32 / 32 ½*	26 ½	41 ½	50 ¼ / 52 ¼*	73 ¼	74 ¾	62 ¾			
VS 264175 L	Horizontal Sliding	On Side	1330/1344*	670	1050	1886/1910*	1860	1900	2192	Not available		
			47 / 47 ½*	26 ½	41 ½	74 ¼ - 75 ¼*	73 ¼	74 ¾	86 ¼			

* Volume and size for double door version.

VS L Bulk Capacity range



Model	Door Opening	HMI position	Capacity	Chamber dimensions			Overall dimensions		
				Width	Height	Depth	Width	Height	Depth
VS 364872 L	Horizontal Sliding or Hinged	On Side	2040	914	1219	1829	1795	2012	2192
			72	36	48	72	70 ¾	79 ¼	86 ¼
VS 355764 L	Horizontal Sliding	On Side	2130	900	1450	1630	2585	1946	2088
			75 ¼	35 ½	57	64 ¼	101 ¾	76 ½	86 ¼
VS 415798 L	Horizontal Sliding	On Side	3800	1050	1450	2500	2910	1950	2964
			134 ¼	41 ¼	57	98 ½	114 ½	76 ¾	116 ¾
VS 398787 L	Horizontal Sliding	On Side	4840	1000	2200	2200	2693	2712	2664
			171	39 ¼	86 ½	86 ½	106	106 ¾	105
VS 3583106 L	Horizontal Sliding	On Side	5100	900	2100	2700	2543	2600	3164
			180	35 ½	82 ¾	106 ¼	100	102 ¼	124 ½
VS 498686 L	Horizontal Sliding	On Side	5940	1245	2184	2184	3213	2768	2664
			209 ¾	49	86	86	126 ½	109	105
VS 4987103 L	Horizontal Sliding	On Side	7170	1250	2200	2607	3243	2700	3073
			253 ¼	49 ¼	86 ½	102 ¾	127 ¾	106 ¼	121
VS 4383130 L	Horizontal Sliding	On Side	7625	1100	2100	3300	2943	2600	3764
			269 ⅕	43 ¼	82 ¾	130	115 ¾	102 ¼	148 ¼
VS 5186126 L	Horizontal Sliding	On Side	9070	1300	2180	3200	3363	2930	3700
			320 ¼	51 ¼	85 ¾	126	132 ½	115 ¼	145 ¾

Note

All models are available in single or double door version, except for VS 161626 L available in single door only. Dimensions are subject to change without prior notice. Always refer to GA drawings. Overall dimensions depend on sterilizer configuration. Custom sizes are also available.



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STEELCO - Miele Group Member

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