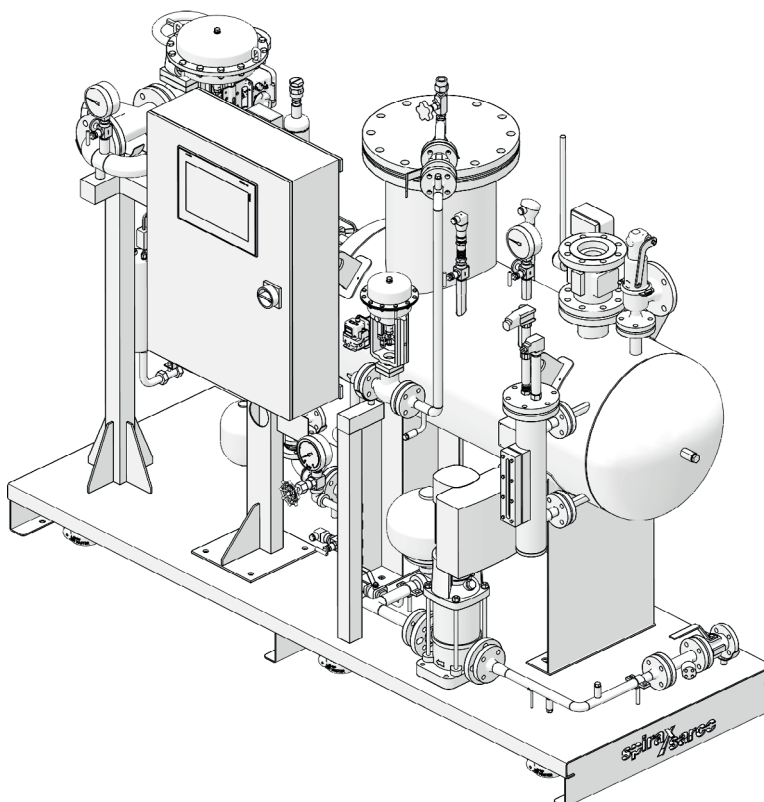




CSG - HS

Clean Steam Generation System for Healthcare



Description

The Spirax Sarco Clean Steam generator range has been designed for the Healthcare sector. Specifically sterilization applications enabling the system to produce high quality steam under a wide variety of operating conditions. The system operates using plant steam as the primary heating medium. All Systems are supplied packaged and ready to install with simple commissioning.

Product range

CSG - HS - 020 nominal production capacity 200 kg/h (441 lbs/hr)*

CSG - HS - 055 nominal production capacity 550 kg/h (1212 lbs/hr)*

Size:

CSG - HS - 120 nominal production capacity 1250 kg/h (2756 lbs/hr)*

CSG - HS - 180 nominal production capacity 1800 kg/h (3968 lbs/hr)*

Versions/Applications: **HS** Healthcare sterilisation.

(*) max steam production at reference operating conditions: primary steam at 9-10 bar g (130.5-145 psi g), production at 3 bar g (45 psi g), feed water at 20 °C (68 °F).

Construction and main features

- System complete, functional and safe
- Compact design
- Modulating pressure and level control: pressure stability and steam quality improvement
- Intelligent PLC with SIMS technology, easy maintenance
- Packaged system with on board wired control panel: easy installation
- Automated start up/commissioning sequence
- High quality dryness exceeds ST79 on performance.
- Configurable options to suit individual needs
- System diagnostics
- Predictive maintenance
- Manufactured in Mexico to ANSI standards
- Spirax Sarco's worldwide service.

Design conditions

Primary side	Design pressure	13 bar g	(188 psi g)	For a custom design, contact Spirax Sarco
	Design temperature	195.1 °C	(383 °F)	
Secondary side	Design pressure	8 bar g	(116 psi g)	
	Design temperature	195.1 °C	(383 °F)	
	Safety valve set pressure	6 bar g	(87 psi g)	
Feedwater	Design pressure	8 bar g	(116 psi g)	
	Design temperature	110 °C	(230 °F)	

Maximum operating conditions

	Without pump	With pump	
Production	Clean saturated steam, up to 6 bar g/165.0 °C (Clean saturated steam, up to 87 psi g/329 °F)		Minimum ambient temperature: 0 °C Designed for indoor installation only, protect from freezing.
Primary side	Plant steam, up to 12 bar g/191.7 °C (Plant steam, up to 174 psi g/277 °F)		
Feedwater	P min. ≥ P clean steam + 0.5 bar g (P min. ≥ P clean steam + 7.2 psi g)	Net positive suction head required (see IM)	
	P max 8 bar g/T max 110 °C (P max 116 psi g/T max 230 °F)		

Note: Feedwater is recommended to be Demineralized or Reverse Osmosis quality to ensure high performance.

Utilities

	Unit without pump	Unit with pump 50 Hz	Unit with pump 60 Hz
Electrical supply (cabinets)	1 x 99-132 VAC 50/60 Hz 0.4 kW (instr.)	3 x 400 V +N 50 Hz 0.8 kW (instr.)	3 x 380 V +N 60 Hz 0.8 kW (instr.)
Air supply (filters)	Minimum 3 bar g (45 psi g) to maximum 15 bar g (217.5 psi g) (only for the unit with pneumatic actuators)		

Performance of the units

Max clean steam production (kg/h or lb/h), with feedwater at 20 °C (68 °F):	Clean steam pressure/bar g (psi g)		
	4.5 (65 psi)	4.0 (58 psi)	3.5 (50 psi)

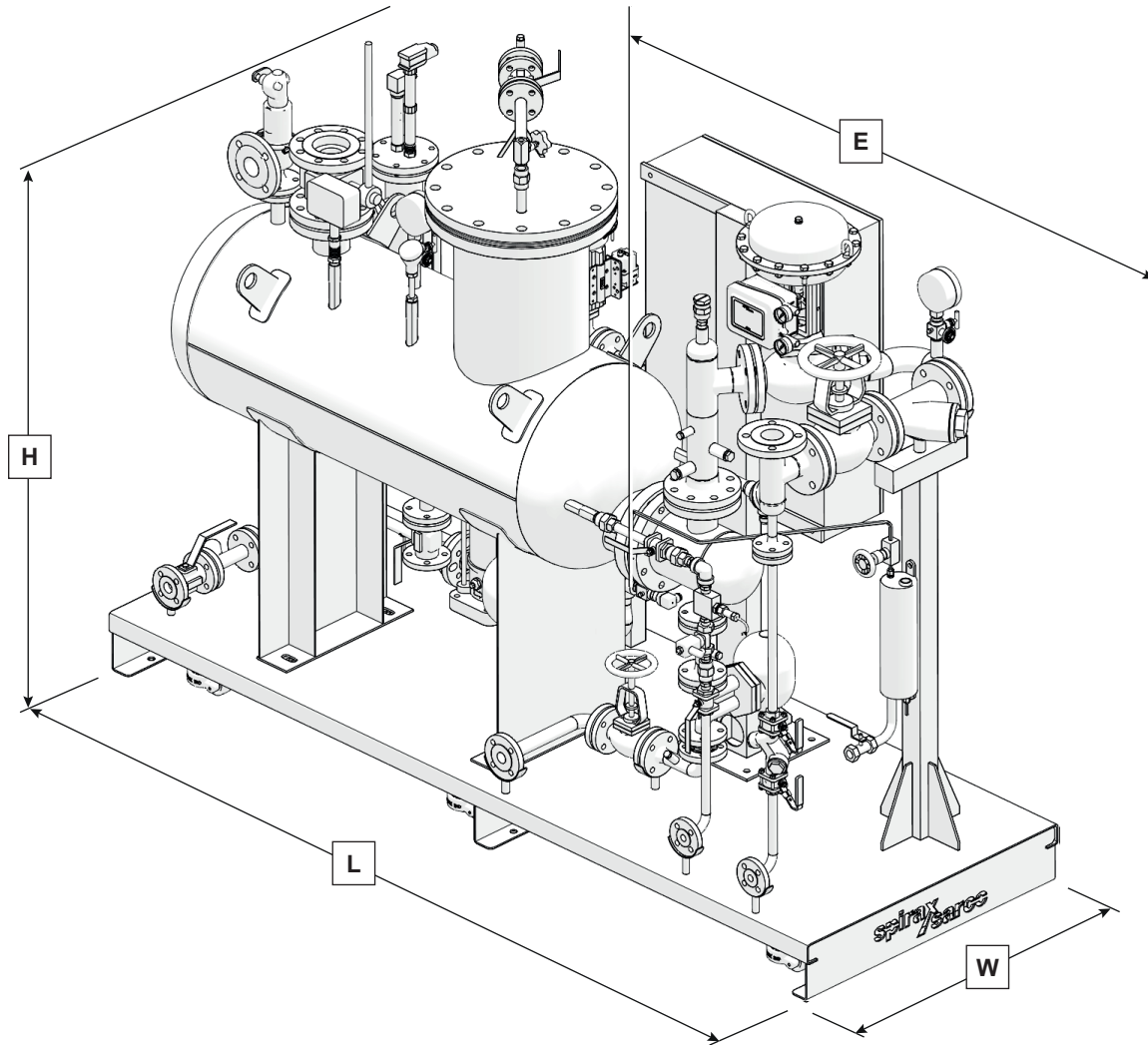
		10.0	220	254	292
		9.5	200	234	271
CSG - HS - 020		9.0	180	214	250
		8.5	159	192	229
		8.0	137	170	207
		10.0	583	677	788
		9.5	531	620	727
CSG - HS - 055		9.0	480	566	666
		8.5	426	511	606
		8.0	370	456	548
	Plant steam pressure/bar g	10.0	1,292	1,516	1,627
		9.5	1,171	1,385	1,490
CSG - HS - 125		9.0	1,044	1,254	1,490
		8.5	930	1,126	1,350
		8.0	823	996	1,213
		10.0	1,884	2,210	2,542
		9.5	1,692	2,016	2,361
CSG - HS - 180		9.0	1,501	1,818	2,162
		8.5	1,313	1,619	1,959
		8.0	1,134	1,417	1,750

Max clean steam production (lbs/hr), with feedwater at 68 °F:		Clean steam pressure/psi g			
		65.3	58.0	50.8	
		145.0	485	559	643
		137.8	441	515	598
CSG - HS - 020		130.5	396	471	551
		123.3	350	424	504
		116.0	303	376	456
		145.0	1285	1,492	1,736
		137.8	1170	1,368	1,602
CSG - HS - 055		130.5	1058	1,248	1,468
		123.3	940	1,127	1,336
		116.0	815	1,006	1,208
	Plant steam pressure/psi g	145.0	2,849	3,341	3,587
		137.8	2,581	3,052	3,285
CSG - HS - 125		130.5	2,302	2,764	3,285
		123.3	2,051	2,483	2,977
		116.0	1,814	2,195	2,673
		145.0	4,153	4,872	5,603
		137.8	3,731	4,445	5,206
CSG - HS - 180		130.5	3,309	4,009	4,767
		123.3	2,894	3,569	4,319
		116.0	2,500	3,124	3,858

Dimensions and weights approximate in mm (inches) and kg (lbs) of a standard unit

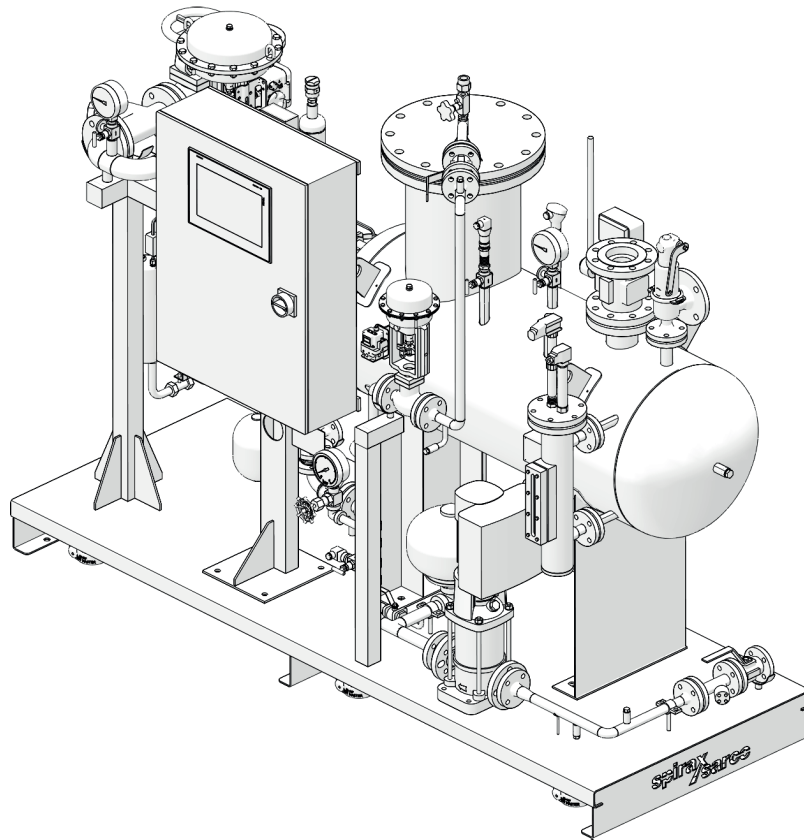
	Dimensions				Weights		
	L Length	W Width	H Height	E Clearance for tube bundle extraction	Empty	In operation	Maximum
020	1800 (71)	800 (31)	1690 (66)	1250 (49)	600 (1322)	700 (1543)	850 (1873)
055	2150 (85)	850 (33)	1800 (71)	1300 (51)	900 (1984)	1100 (2425)	1300 (2866)
125	2550 (100)	1450 (57)	2030 (80)	1600 (63)	1200 (2645)	1550 (3417)	1800 (3968)
180	3150 (124)	1450 (57)	2030 (80)	2000 (78)	1600 (3527)	2100 (4629)	2500 (5511)
Depending on what configuration is chosen							

For detailed dimensions of the unit, size and position of the connections, clearance for the tube bundle extraction, weights and other constructive information, refer to the specific general arrangement drawing of the product.



Connections (Metric)

	020	055	125	180
Plant steam inlet connection	DN32 PN25	DN50 PN25	DN80 PN25	DN100 PN25
Condensate outlet connection	DN25 PN40	DN25 PN40	DN40 PN40	DN40 PN40
Clean steam outlet connection	DN50 PN40	DN80 PN40	DN125 PN16	DN150 PN16
Feedwater inlet connection	DN15 PN40	DN20 PN40	DN25 PN40	DN32 PN40
Safety valve discharge	1" G-f	DN50 PN16	DN80 PN16	DN80 PN16
Not condensable vent connection	¼" G-f	¼" G-f	¼" G-f	¼" G-f
Drain connection	DN25 PN40	DN25 PN40	DN25 PN40	DN25 PN40
Plant steam condensate drain connection	DN15 PN40	DN15 PN40	DN15 PN40	DN15 PN40
TDS Blowdown connection	DN15 PN40	DN15 PN40	DN15 PN40	DN15 PN40
Sampling system (cooling water in/out - sample out)	½" BSP - 6 mm	½" BSP - 6 mm	½" BSP - 6 mm	½" BSP - 6 mm
Options				



Connections (Imperial)

	020	055	125	180
Plant steam inlet connection	1¼" ANSI 150	2" ANSI 150	3" ANSI 150	4" ANSI 150
Condensate outlet connection	1" ANSI 300	1" ANSI 300	1½" ANSI 300	1½" ANSI 300
Clean steam outlet connection	2" ANSI 300	3" ANSI 300	5" ANSI 300	6" ANSI 300
Feedwater inlet connection	½" ANSI 300	¾" ANSI 300	1" ANSI 300	1¼" ANSI 300
Safety valve discharge	1" NPT	1¼" NPT*	3" NPT	3" NPT
Non condensable vent connection	¼" NPT	½" NPT	¼" NPT	¼" NPT
Drain connection	1" ANSI 300	¾" ANSI 300	1" ANSI 300	1" ANSI 300
Plant steam condensate drain connection	½" ANSI 150	½" ANSI 150	½" ANSI 150	½" ANSI 150
TDS Blowdown connection	½" ANSI 150	½" ANSI 150	½" ANSI 150	½" ANSI 150
Sampling system (cooling water in/out - sample out)	½" BSP	½" BSP	½" BSP	½" BSP
Options				

Product nomenclature and selection guide

The product nomenclature is based on the characteristics of the main elements and options, identified as follows:

CSG - HS -	Basic configuration	
Design code	E	EN
	A	ASME *
Shell type	F	Flanged openable*
Unit size:	CSG-HS-020	Unit size 200 kg/hr (441 lbs/hr)
	CSG-HS-055	Unit size 550 kg/hr (1212 lbs/hr)
	CSG-HS-125	Unit size 1250 kg/hr (2756 lbs/hr)
	CSG-HS-180	Unit size 1800 kg/hr (3968 lbs/hr)
Valve actuation type:	PN	Pneumatic (fail-safe) *
	EL	Electric (fail-safe)
Control:	P3	PLC = Siemens S7.1200 series + 7" display *
	P2	PLC = Allen-Bradley Compact Logix 1700 series + 7" display
	P1	PLC = ABB AC500 series + 7" display
Communication interface:	C3	Modbus TCP/IP
	C2	BACnet MS/TP
	C7	Profibus DP
	C4	Profinet
Unit frame	0	Carbon steel base no frame
	1	Carbon steel with frame painted (no panels)
	2	Carbon steel with frame painted (inc panels)
	3	Stainless steel base no frame (304)
	4	Stainless steel (304) with frame painted (no panels)
	5	Stainless steel (304) with frame painted (inc panels)
Control Panel location	S	Side *
	F	Front
Insulation:	1	Steam generator body only *
	2	Steam generator and hot piping
	3	Insulation to EEnv specification
	0	Not insulated
Handling wheels and feet:	N	None (only plates with anchor holes are provided) *
	F	Adjustable feet
	W	Pivoting wheels, lockable