



## PS-SC Pure Steam Sample Condenser

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This PS-SC trolley mounted is designed to allow Clean Steam (CS) and Water For Injection (WFI) samples to be taken quickly and easily whilst maintaining a sterile testing environment. This trolley is ideal to be connect at the sampling point and can be operated with either mains or chilled water as the cooling medium. Availability of aseptic sample valve allow fine control of sample flow during testing The PS-SC can be sterilized in situ-on-line, thus ensuring continuity of samples regardless of testing frequency, ideal for fluids in pharmaceutical and purity systems applications.

### Installation

Where steam is the sample medium, a valve (1) excluded from supply, suitable for continuous steam duty must be installed adjacent to steam manifold.

First of all the isolation valve on main steam (1)( or on the use point ) should be connected with the valve on the top of heat exchanger 2)( tube side ) by the first flexible silicone hose clamped included in the supply; same operation for cooling medium that should be connected with the valve (4) on the lower body connection of heat exchanger ( shell side ) by the second flexible silicone hose clamped that which is supplied with the trolley unit.

The medium to be condensed/cooled passes through the tube side and typically a regulating valve (2) will be used to throttle the sample medium flow. When exit from heat exchanger, the condensate flush in the SSB sample bottle that can be disconnected and removed, when sample is finish, ready for analysis.

Cooling medium is channelled countercurrent inside the shell to ensure maximum efficiency; typically mains or chilled water; in order to allow the flow of cooling medium to be controlled during testing an isolation valve (4) should be included. A drain valve (5) also should be included between the cooling water isolation valve (4) and heat exchanger to allow residual cooling water to be drained from the shell prior to sterilization.

The cooling water outlet it is connected to the waste tank by a flexible silicone hose and must be always vented to atmosphere free of obstructions or isolation valves to prevent any build up in the shell of the heat exchanger unit. Obviously the waste tank must be drained through bottom plug.

### Features:

- Aisi 316L – 1.4404 stainless steel construction, suitable for PS pure steam and WFI systems
- Self-draining design, eliminates possibility of sample retention
- Fully sterilizable in place (SIP)
- Trolley mounted design – single unit can be used to take samples throughout a system

### Typical applications:

- Pure Steam sampling
- Point of use cooling / sampling
- In-line conductivity monitoring

### Operating conditions:

Max working pressure : steam at 4 barg at 151°C  
: cooling water at 6 barg

@ Note – pressure rating may exceed that of clamps connections

### Capacities (approximate):

- Steam : 10 kg/h of condensate at 100°C  
- Water : 30 lt/h of water from 85°C to 30°C  
based on a cooling water temperature of 18°C and flow rate of 10 lt/min.

### Standards:

Heat exchanger according to PED directive 97/23/CE are CE compliant under the SEP "Sound Engineering Practice" (Article 3 – Paragraph 3)



## HOW TO USE

### Sterilization in place (SIP)

Prior to testing or at periodic intervals it may be appropriate to sterilize the unit to ensure that sample integrity is maintained during testing.

Caution: The unit will become hot during operation and sterilization; personnel should be protected against contact with the installation with appropriate insulation.

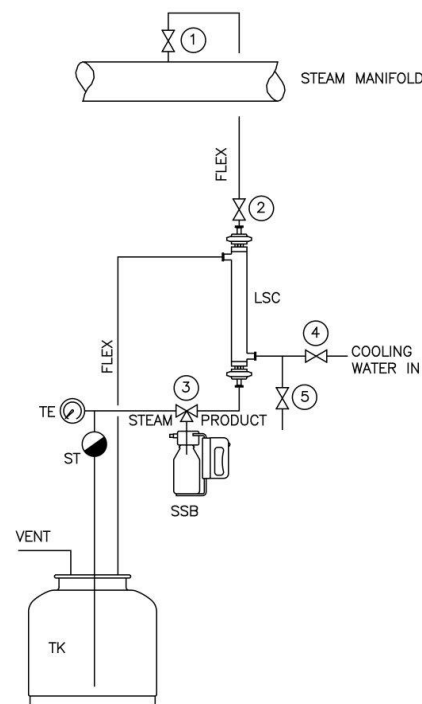
Prior to start, to ensure that the sample bottle connection labeled "IN" is connected with the heat exchanger and connection "OUT" is connected with the steam trap.

- 1) Open cooling water drain valve (5) to allow residual cooling water to be drained from the shell. Unless drained, this water will boiling during sterilization
- 2) Open the knob labeled "STEAM" on the top of the bottle
- 3) Slowly open the steam inlet valve (2) for sterilize all surface in contact with the product ; the condensate is drained in the waste tank
- 4) At the completion of steaming cycle, first close the steam intercepting valve (2) secondly close the knob labeled "STEAM" on the top of the bottle.

### Sampling

A sterile sample can now be taken as follow:

- 1) Open the cooling water inlet valve (4) and ensure that a flow is present
- 2) Open the knob labeled "PRODUCT" on the top of the bottle
- 3) Open the steam inlet valve (2)
- 4) Once a suitable sample has been obtained, close the knob "PRODUCT"
- 5) Close the steam inlet valve (2)
- 6) Cooling medium should be allowed to flow for a short period in order to condense/cool any medium passing through the LSC. When no further sample is evident and the system has cooled, isolate the cooling water supply valve (4)
- 7) Open the knob labeled "STEAM" on the top of the bottle to allow any residual heat energy to be dissipate and the entire system drained
- 8) Close the knob labeled "STEAM" on the top of the bottle
- 9) Disconnect the sample bottle by the clamp connections ready for laboratory analysis



## Product Specification

### Materials:

Tube, valves and fittings in AISI 316L – 1.4404  
flexible hose Silicone Platinum Cured APSW-P 4-ply, wire reinforced, mandrel-wrapped  
50 lt. capacity waste tank in AISI 304  
clamp gaskets in PTFE  
handling trolley in AISI 304 with no.4 revolving wheels

### Dimensions and weight:

500 x 400 x h max. 1300 mm  
empty weight 000 kg. approx

### Connections:

Steam: ½" clamp BS 4825  
Cooling water: ¾" clamp BS 4825

### Supply included:

no. 2 flexible hose Silicone Platinum Cured APSW-P  
4-ply, wire reinforced, mandrel-wrapped ¾" clamp  
12 ft. length for pure steam and cooling water connections

### Available accessories:

- no.1 Steam inlet sanitary ball valve ½" clamp (2)  
no.2 Cooling water inlet and drain ball valve ¾" clamp (4-5)

