

Sample Coolers

Sample Coolers

SC30

The HSC30 is a portable sample cooler designed to allow samples to be taken quickly and safely at any accessible location within a clean steam, or high purity steam or WFI distribution system. Cooling water connections are 3/4" Tri-Clamp® compatible which enable the unit to be connected easily to a local water supply. The SC30 is suitable for autoclaving.

SC50

Designed for use in environments where the cooling water supply may lead to fouling of the coil, the SC50 can be disassembled for cleaning. The orientation of the sample connections also makes the SC50 suitable for continuous inline cooling applications such as conductivity monitoring in high purity water systems.

SC60

The SC60 is intended for permanent mounting. Utilizing the same basic coil design as the SC30 and SC50 units, the SC60 is ideal for obtaining samples at both the point of generation (clean steam generator, WFI still), or at any permanent sampling point throughout the distribution system. The SC60 can be sterilized in-place, thus ensuring continuity of samples regardless of testing frequency.

SAMPLE COOLER ACCESSORIES

Steriflow offers a comprehensive range of ancillary products for use with all models of sample coolers (see Ordering Schematic). These include:

- SV, steam rated sample valve
- PTFE-lined sample hoses (for use with portable SC30), or with the permanently installed SC50 and SC60
- Isolation valves
- Hose kits
- Adapter kits



SC30



SC50



SC60

Steriflow's range of sample coolers allow clean steam and high purity water samples to be taken quickly and easily while maintaining a sterile testing environment. The SC50 and SC60 units are designed to be mounted at the sampling point, while the SC30 is a free-standing portable unit. All models can be operated with chilled water as the cooling medium.

Where the quality of the cooling water may cause fouling of the coil, the SC50 can be easily disassembled for cleaning. A wide range of ancillary products are available for use with all models of sample cooler.

DOCUMENTATION

The following documentation is shipped with each order:

- Steriflow Unicert
 - Traceable Material Heat Number for body and ferrels
 - Certificate of Compliance to FDA and USP Class VI
 - Certificate of Surface Finish
- Final Test Reports and Certificate of Origin available upon request at time of order

PRODUCT FEATURES

- 316/316L Stainless Steel construction
- High efficiency
- Free draining designs
- Fully sterilizable/autoclavable

STANDARDS

- Where applicable, all sample cooler models comply with ASME BPE criteria
- All sample cooler models are CE compliant under the SEP category of the PED directive

OPTIONS

- Electropolish

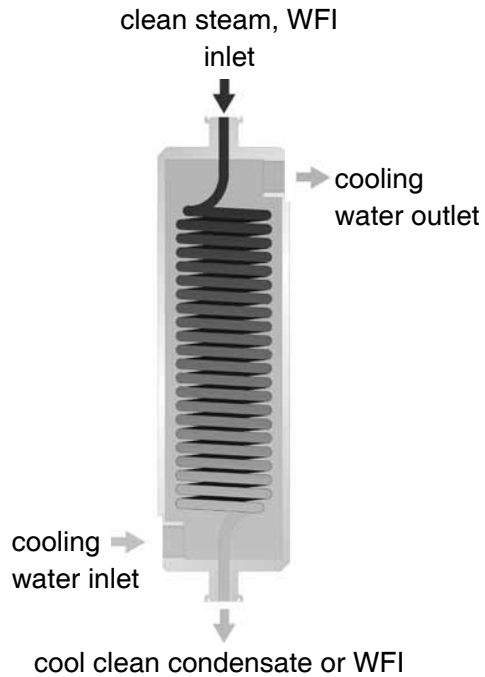
CLEANING & PACKAGING

- All sample coolers are cleaned after manufacture, capped, sealed in a polythene bag and individually boxed

TYPICAL APPLICATIONS

- Continuous or select point steam sampling
- Point-of-use cooling
- In-line conductivity monitoring of clean condensate
- Cooling of pump seal water

SAMPLE COOLER OPERATION



OPERATION

The cooling medium passes through the center shell of the coil. A hand regulating valve (SV) is used to throttle the sample medium flow through the tubing coil. Cooling water is passed through the shell of the unit in an opposing direction to the sample medium in order to ensure optimum efficiency. The heat energy of the sample medium is absorbed by the flowing cooling water, resulting in a drop in the sample temperature.

Where steam is the sample medium, the cooling water will first absorb the steam's latent heat content, condensing it back to water. Further heat transfer as the condensate passes through the coil will reduce its sensible heat/temperature prior to discharge.

CAPACITY

- Pure/Clean Steam: All models will condense approximately 22 lbs/hr (10 kg/h) of steam from 43.5 psig (3 barg) to 86°F (30°C) condensate with 0.1 l/s of cooling water. The cooling water outlet temperature will increase from 68°F to 113°F (20°C to 45°C) during operation at these conditions. Note: Steriflow can computer model typical testing conditions for all units upon request.
- WFI: All models will cool approximately 66 lbs [30 kg/hr (30L/hr)] of WFI from 185°F(85°C) to 86°F (30°C) using 0.2 L/s of cooling water at 68°F (20°C).

SPECIFICATIONS

SC30 Sample Portable Cooler

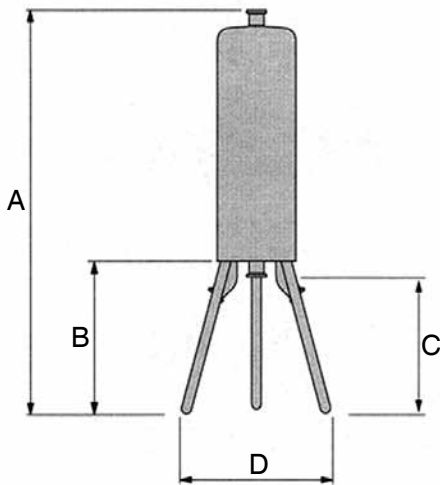
The SC30 Sample Cooler is designed to facilitate sampling of clean steam and Water For Injection (WFI), while maintaining product sterility during testing. Constructed in 316L stainless steel, the SC30 is intended for portable operation at any access point in those systems.

Sampling is achieved by regulating a flow of clean steam or WFI through the central coil controlled using the SV hand valve. A cooling medium, typically city main water, passes through the shell of the unit absorbing heat from the test sample, condensing or cooling the sample prior to discharge from the coil.

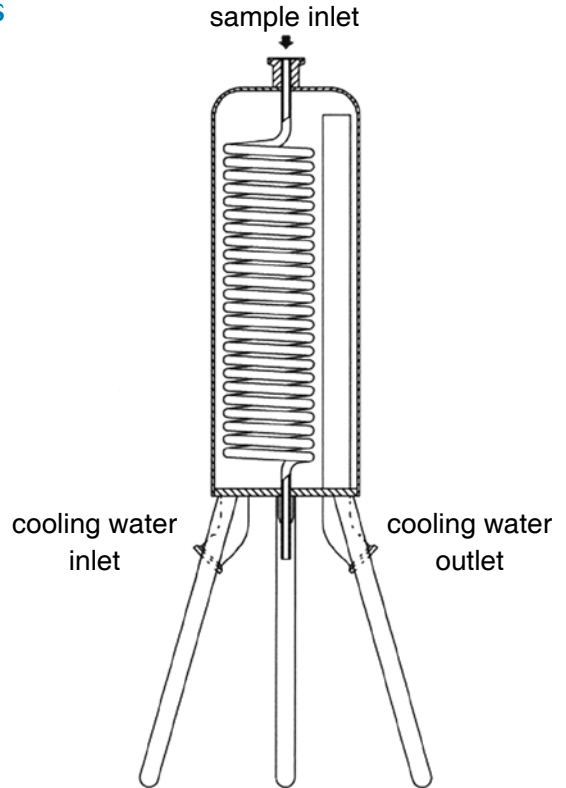
All surfaces wetted by the sample medium have a maximum surface finish of SF1, 20 Ra µin (0.5 µin Ra).

Features offered by the SC30 include:

- 316L stainless steel construction – suitable for clean steam and WFI systems
- Self-draining design – eliminates possibility of sample retention
- Fully sterilisable/autoclavable – satisfies validation criteria
- Availability of hygienic sample valve – allows fine control of sample flow during testing
- Portable design – single unit can be used to take samples throughout a system, carrying case available



Model	Dimensions inches (mm)				Weight Lbs (Kgs)
	A	B	C	D	
std. legs	20.3 (515)	7.7 (195)	6.3 (160)	6.6 (168)	10.0 (4,5)
ext. legs	24.6 (626)	12.0 (306)	6.3 (160)	11.0 (279)	10.0 (4,5)



Sample inlet/outlet connection: 1/2" Tri-Clamp®

Cooling water connections: 3/4" Tri-Clamp®

Shell, coil and fittings: 316L Stainless Steel

Coil surface area: 0.97 ft² (0.09m²)

Coil design pressure: 145 psig @ 365°F (10 barg @ 185°C)

Shell design pressure: 145 psig @ 212°F (10 barg @ 100°C)

Surface finish

- Wetted surfaces: SF1 20 Ra µin (0.5 µm Ra); optional: SF5, 20 Ra µin (0.5 µm Ra electropolish)
Note: coil formed from tube having an internal finish of 10 Ra µin (0.25 µm Ra);
- External body and fittings: satin polish

Available accessories

- Sample valve
- Cooling water hose adaptor kit
- Sample hose
- Carrying case
- Extended Legs

Capacities (approximate)

- Steam – 10 l/h of condensate at 86°F (30°C) from steam at 43.5 psig (3 barg)
- Water – 30 l/h of water from 185°F to 86°F (85°C to 30°C)

SPECIFICATIONS

SC50 Sample Cooler

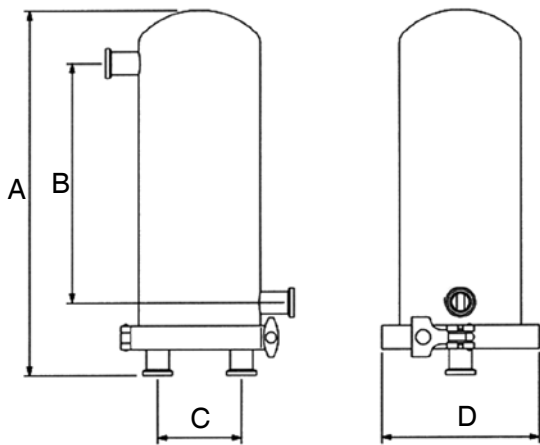
The SC50 Sample Cooler is designed to allow clean steam and Water For Injection (WFI) samples to be taken quickly, easily and safely while maintaining product sterility during testing. Intended for use in systems where fouling of the coil through scale build-up is anticipated, the SC50 can be easily disassembled for cleaning.

Sampling is achieved by regulating a flow of clean steam or WFI through the central coil by using a hand regulating valve (SV). Cooling medium: typically city main water, passing through the shell of the unit absorbs heat from the test sample, condensing or cooling the sample prior to discharge from the coil.

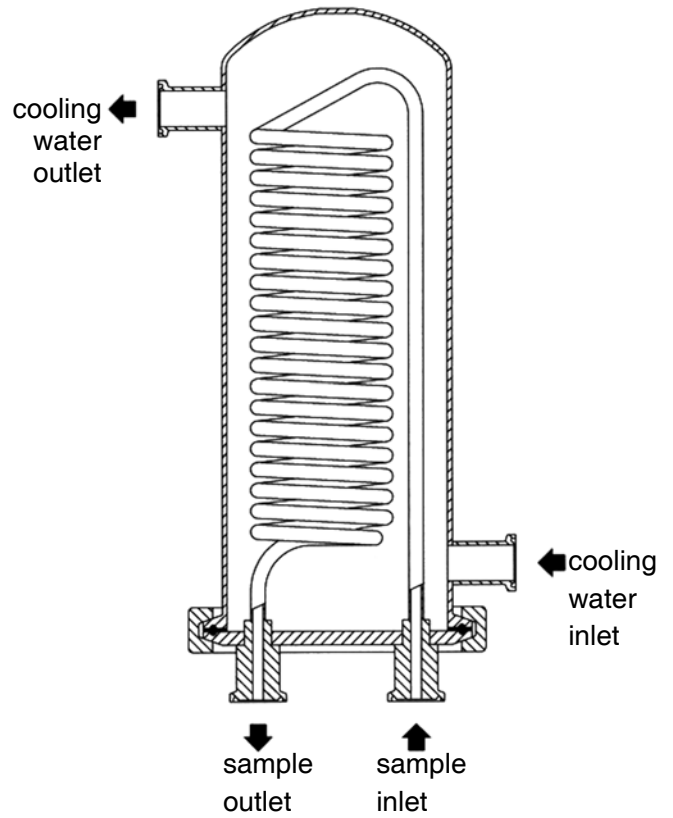
All surfaces wetted by the sample medium have a maximum surface finish of SF1 20 Ra μin (0.5 μm Ra). Full material certification is supplied for wetted parts.

Features offered by the SC50 include:

- 316L stainless steel construction – suitable for clean steam and WFI systems
- Unit designed to be disassembled – easy to clean
- Fully sterilizable/autoclavable – satisfies validations criteria
- Availability of hygienic sample valve – allows fine control of sample flow during testing
- Simple to install – use of Tri-Clamp® compatible fittings ensures that the SC50 is simple to install
- Mounts using standard pipe clamps



Dimensions, inches (mm)				Weight Lbs, Kgs
A	B	C	D	
12.0 (305)	7.9 (200)	2.8 (70)	5.5 (140)	7.1 (3,2)



Sample connection: (inlet/outlet) 1/2" Tri-Clamp® compatible

Cooling water connections: 3/4" Tri-Clamp® compatible

Shell, coil and fittings: 316L Stainless Steel

Coil surface area: 96.9 ft² (0.09m²)

Coil surface area: 0.97 ft² (0.09m²)

Coil design pressure: 145 psig @ 365°F (10 barg @ 185°C)

Shell design pressure: 145 psig @ 212°F (10 barg @ 100°C)

Surface finish

- Wetted surfaces: SF1 20 Ra μin (0.5 μm Ra); optional: SF5, 20 Ra μin (0.5 μm Ra electropolish) Note: coil formed from tube having an internal finish of 10 Ra μin (0.25 μm Ra);
- External body and fittings: satin polish

Mounting: The SC50 is designed to be mounted in a vertical orientation using a standard 4" pipe clamp

Capacities (approximate)

- Steam – 10 l/h of condensate at 86°F (30°C) from steam at 43.5 psig (3 barg)
- Water – 30 l/h of water from 185°F to 86°F (85°C to 30°C)

SPECIFICATIONS

SC60 Sample Cooler

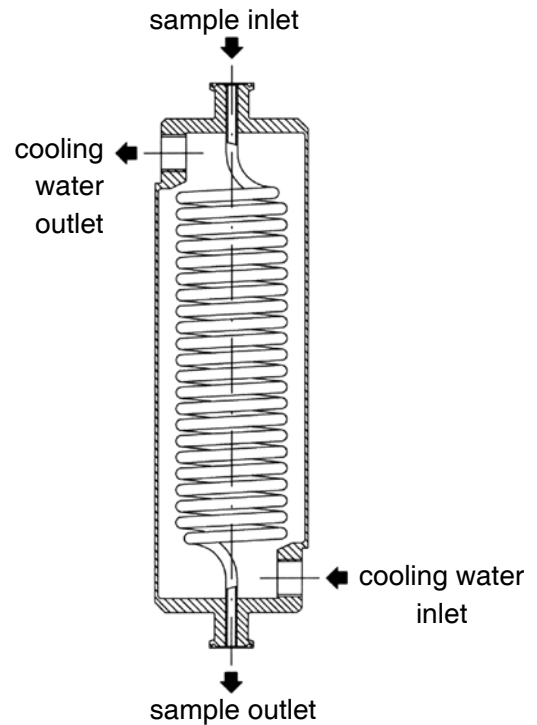
The SC60 Sample Cooler is designed to allow clean steam and Water For Injection (WFI) samples to be taken quickly, easily and safely while maintaining product sterility during testing. Constructed in 316L stainless steel, the SC60 is intended for permanent installation at the sampling point.

Sampling is achieved by regulating a flow of clean steam or WFI through the central coil controlled using a hand throttling valve (SV). The cooling medium is typically city main water. Passing through the shell of the unit, the cooling water absorbs heat from the test sample, condensing and cooling the sample prior to discharge from the coil.

All surfaces wetted by the sample medium have a maximum surface finish of SF1 20 Ra μ in (0.5 μ m Ra). Full material certification is supplied for wetted parts.

Features offered by the SC60 include:

- 316L stainless steel construction – suitable for clean steam and WFI systems
- Self-draining design – eliminates possibility of sample retention
- Can be sterilized in place or autoclaved – satisfies validation criteria
- Availability of hygienic sample valve – allows fine control of sample flow during testing
- Mounting bosses : wall mount bolt kit included



Sample connection: (inlet/outlet) 1/2" Tri-Clamp®

Cooling water connections

- 1/2" BSPT, NPT
- 1/2" Tri-Clamp® compatible

Shell, coil and fittings: 316L Stainless Steel

Coil surface area: 0.97 ft² (0.09m²)

Coil design pressure: 145 psig @ 365°F (10 barg @ 185°C)

Shell design pressure: 145 psig @ 212°F (10 barg @ 100°C)

Surface finish

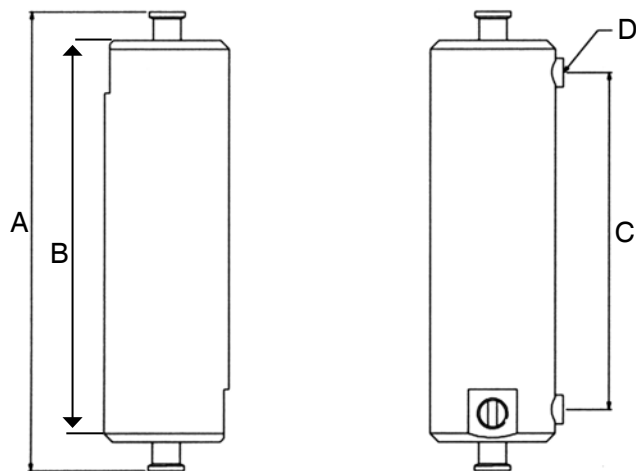
- Wetted surfaces: SF1 20 Ra μ in (0.5 μ m Ra); optional: SF5, 20 Ra μ in (0.5 μ m Ra electropolish) Note: coil formed from tube having an internal finish of 10 Ra μ in (0.25 μ m Ra);
- External body and fittings: satin polish

Available accessories

- Sample valve
- Sample outlet hose adaptor
- Cooling water isolation valve

Capacities (approximate)

- Steam – 10 l/h of condensate at 86°F (30°C) from steam at 3 barg
- Water – 30 l/h of water from 185°F to 86°F (85°C to 30°C)



Dimensions, inches (mm)				Weight Lbs (Kgs)
A	B	C	D	
12.6 (320)	9.4 (240)	9.3 (235)	M8	6.6 (3,0)

ORDERING SCHEMATIC – SC30/SC50/SC60 SERIES

Model	—	Cooling Water Connection	—	Legs	—	Finish

	Model
SC30	Sealed Body Portable Unit with 1/2" Tri-Clamp® sample inlet, outlet
SC50	Tri-Clamp® body Unit with 1/2" Tri-Clamp® sample inlet, outlet
SC60	Sealed Body Unit with 1/2" Tri-Clamp® sample inlet, outlet

	Legs
	SC30 Series
SL	Standard Legs
FL	Extended Legs with Floor Pads

	Legs
	SC50/SC60 Series
00	None

	Cooling Water Connection
	SC30/SC50 Series
D	3/4" Tri-Clamp®

	Finish
00	Standard SF1, 20 Ra µin (0,5 µm Ra), Mechanical Polish
EP	Optional SF5, 20 Ra µin (0,5 µm Ra), Electro-Polish

	Cooling Water Connection
	SC60 Series
A	1/2" Tri-Clamp®
B	1/2" NPT Female
C	1/2" BSP Female
D	3/4" Tri-Clamp®
E	1" Tri-Clamp®

Note: Steriflow Unicert included with each order

ACCESSORIES

SV Steam Sampling Valve

(see Ordering Code p.8)

Designed for use in high purity steam systems, the SV utilizes a steam resilient Perlast® seat seal to ensure optimum service life and bubble tight shut-off. The SV is designed to connect directly onto the sample cooler inlet to control the flow of clean steam into the unit and condensate out. The SV can also be used for any general steam sampling application where a hand valve is required.

Connection: 1/2" Tri-Clamp®

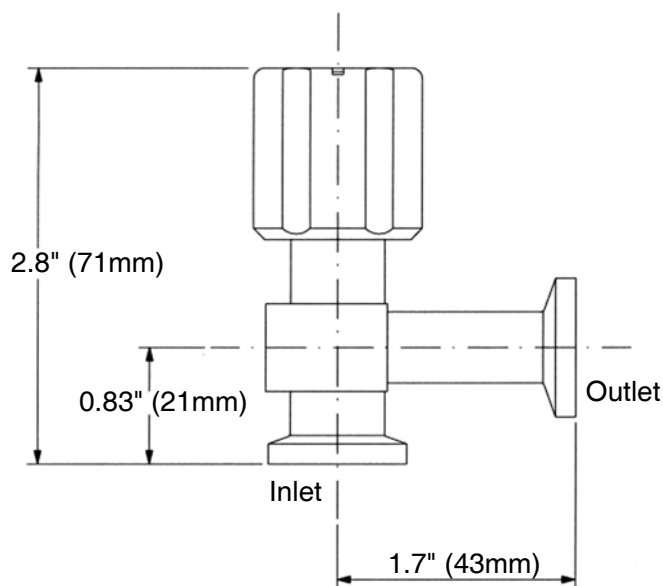
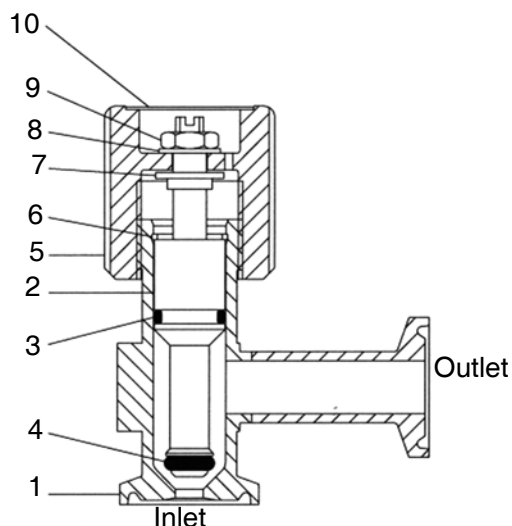
Maximum operating pressure: 116 psig (8.0 barg)

Maximum operating temperature : 347°F (176°C)

Surface finish

- Wetted surfaces: SF1, 20 Ra µin (0.5 µm Ra)
- External surfaces: Satin polish

Materials of Construction		
1	Body	316L Stainless Steel
2	Valve Stem	316L Stainless Steel
3	Stem Seal	Viton (FDA and USP Class VI compliant)
4	Seat Seal	Perloast® (FDA and USP Class VI compliant)
5	Handle	Polyetherimide
6 -10	Non-wetted components	Stainless Steel



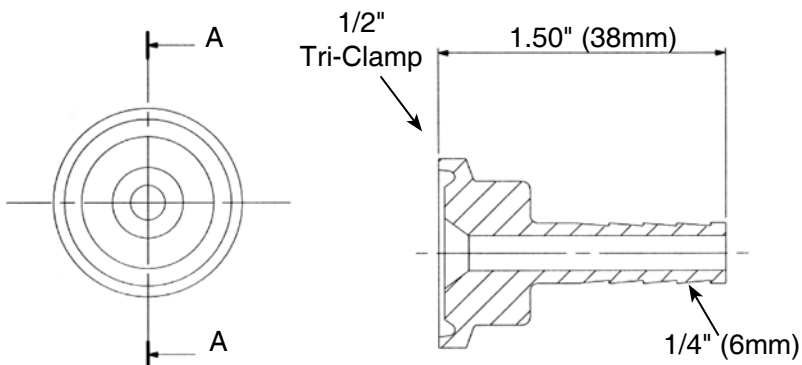
SA Hose Adaptor

(see Ordering Code p.8)

The SA allows users to connect the 1/2" Tri-Clamp sample outlet on any SC unit to a sanitary flexible hose so the sample can be directed where required. It can also be used without a hose as a directional spout.

Connection: Inlet 1/2" Tri-Clamp® outlet 1/4" nose barb (6mm)

Surface finish: SF1 20 Ra µin (0.5 µm Ra)



ORDERING SCHEMATIC – SAMPLE VALVE

(For use at sample cooler stream inlet, or a sanitary sample valve for any compatible process)

Model	—	Inlet Connection	—	Outlet Connection	—	Accessory	—	Finish

Model	
SV	Standard

Accessory	
0	None
K	Wing Nut Clamp & PTFE Gasket

Inlet Connection	
050	1/2" Tri-Clamp® (will mate 1/2" or 3/4" ferrule)
100	1" Tri-Clamp® (will mate 1" or 1-1/2" ferrule)

Finish	
00	SF1, 20 Ra µin (0,5 µm Ra), Mechanical Finish
EP	SF5, 20 Ra µin (0,5 µm Ra), Electro-Polish

Outlet Connection	
050	1/2" Tri-Clamp® (will mate 1/2" or 3/4" ferrule)

ORDERING SCHEMATIC – SAMPLE HOSE

(For connecting clean steam or on WFI to sample cooler inlet)

Model	—	Size	—	Length

Model	
SH	Standard, FDA, USP Class VI PTFE Liner

Length	
2m	2m Long, PTFE with 304SS braid, FDA white silicon outer
4m	4m Long, PTFE with 304SS braid, FDA white silicon outer

Size	
050	1/2" 316 SST Tri-Clamp® / 5 Ra µin Electro-Polish

ORDERING SCHEMATIC – SAMPLE ADAPTER

To adapt 1/2" Tri-Clamp® sample outlet to 1/4" hose, or act as spout)

Model	—	Size	—	Accessory	—	Finish

Model	
SA	Sample Adapter

Accessory	
00	None
KT	Kit with Tri-Clamp® & PTFE Gasket

Size	
050	1/2" Tri-Clamp®

Finish	
00	SF1, 20 Ra µin (0,5 µm Ra), Mechanical Finish
EP	SF5, 20 Ra µin (0,5 µm Ra), Electro-Polish



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