SC20
Sample Coolers

- For accurate sampling of water, steam and process liquors
- Stainless steel coil and body minimizes corrosion
- Counter current flow for efficient cooling
- For water, steam, or condensate sampling

Description

The Spirax Sarco SC20 sample cooler is used to cool samples of boiler water, process liquor, or steam from vessels at high temperature and pressure. The cooler consists of a stainless steel coil, through which the sample flows, and a stainless steel body, through which cooling water flows in the opposite direction. A pre-drilled mounting bracket is incorporated into both end caps. The SC20 is also available with a ferrule for connecting to an industry standard 1/2" sanitary clamp fitting.

Available types

The SC20 sample cooler is available in five variants:-

BSP connections (6 mm O/ D tube).

NPT connections (6 mm O/ D tube). A 1/4" NPT male x 6 mm O/ D stud coupling is supplied loose for connecting the sample inlet tube to an NPT inlet valve or fitting.

BSP sample cooler kit (SCS20), complete with sample inlet valve, cooling water inlet valve, and carbon steel fittings.

A kit (SCS20), as above, but with stainless steel fittings.

A sample cooler (BSP or NPT) with a ferrule suitable for connection to an industry standard 1/2" sanitary clamp fitting (clamp not supplied).

Note: The sample cooler is not polished or specially treated internally, and the internal finish is not specified.

Stainless steel couplings are also available separately:-
1/4" BSP male x 6 mm O/ D tube.
1/4" NPT male x 6 mm O/ D tube.

Sizes and pipe connections

Cooling water IN and OUT connections

BSP version	NPT version	Ferrule versions
1/2" BSP	1/2" NPT	1/2" BSP or 1/2" NPT

Sample tube diameter (inlet and outlet)

BSP version	NPT version	Ferrule versions
6 mm O/ D	6 mm O/ D*	6 mm O/ D with 1/2" ferrule for clamp fitting

* A 1/4" NPT male x 6 mm O/ D stud coupling is provided.

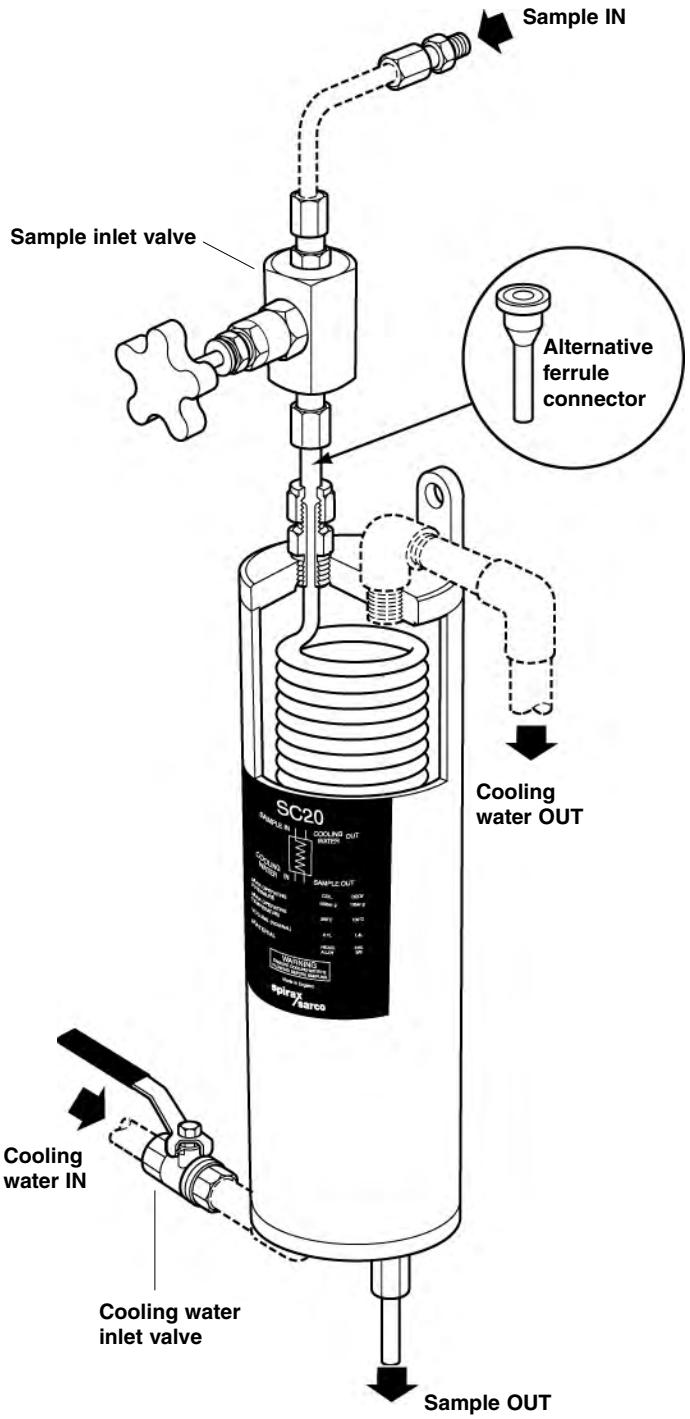
Limiting conditions

Part	Design temperature	Design pressure
Coil	572°F (300°C)	464 psig (32 barg)
	500°F (260°C)	638 psig (44 barg)
	248°F (120°C)	913 psig (63 barg)
Body	212°F (100°C)	145 psig ((10 barg)
Cold hydraulic test pressure		232 psig (16 barg)

Clamp adaptor - Pressure and temperature dependent on clamp manufacturers recommendation.

Materials

Body and Coil Austenitic stainless steel grade 316L



Local regulations may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only. In the interests of development and improvement of the product, we reserve the right to change the specification.

Performance

The tables below show typical sample outlet temperatures above cooling water inlet temperatures for several pressures and cooling water flowrates.

Example

A sample flowrate of 0.13 GPM is required from a boiler operating at 145 psig. For a cooling water flowrate of 4.8 GPM from Table 1 the sample outlet temperature would be 7°F above the cooling water inlet temperature. If the cooling water is at 60°F, the sample temperature would be 67°F. Table 2 is used in the same way for steam.

Samples may not be taken where marked '-' as the flow is limited by the sample inlet valve capacity.

Table 1 Saturated water (e.g. boiler water)

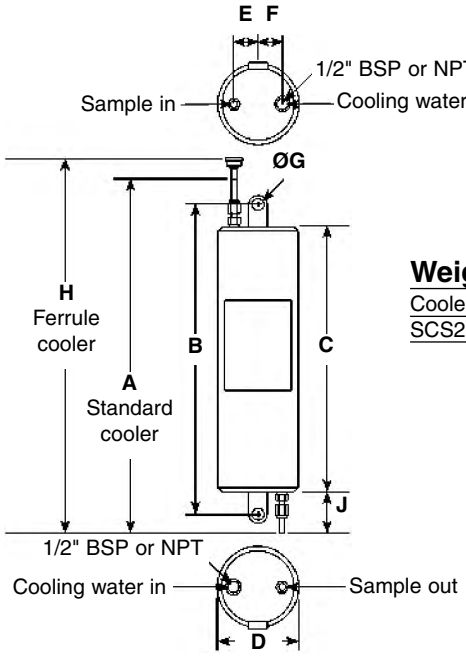
Sample Flowrate GPM	Cooling water flowrate 1.6 GPM					Cooling water flowrate 4.8 GPM					Cooling water flowrate 9.5 GPM				
	Boiler pressure psig														
	15	43	101	145	290	15	43	101	145	290	15	43	101	145	200
0.04	2°F	2°F	5.5°F	11°F	11°F	0°F	0°F	2°F	2°F	7°F	0°F	0°F	0°F	0°F	3.5°F
0.09	3.5°F	3.5°F	11°F	14.5°F	14.5°F	2°F	2°F	3.5°F	3.5°F	11°F	0°F	0°F	0°F	2°F	7°F
0.13	9°F	9°F	14.5°F	20°F	20°F	5.5°F	5.5°F	7°F	7°F	14.5°F	0°F	0°F	3.5°F	5.5°F	11°F
0.18	12.5°F	12.5°F	20°F	23.5°F	23.5°F	9°F	9°F	11°F	11°F	18°F	2°F	2°F	3.5°F	5.5°F	14.5°F
0.22	18°F	18°F	23.5°F	27°F	27°F	11°F	11°F	14.5°F	14.5°F	21.5°	5.5°F	5.5°F	7°F	9°F	16°F
0.26	25°F	25°F	29°F	32.5°F	32.5°F	16°F	16°F	18°F	18°F	25°F	7°F	9°F	9°F	11°F	20°F
0.35	29°F	32.5°F	36°F	39.5°F	39.5°F	20°F	21.5°F	23.5°F	25°F	32.5°F	11°F	12.5°F	14.5°F	16°F	27°F
0.44	32.5°F	36°F	43°F	47°F	48.5F	27°F	29°F	29°F	32.5°F	39.5°F	18°F	20°F	21.5°F	23.5°F	32.5°F
0.53	39.5°F	41.5°F	52°F	54°F	56°F	30.5°F	32.5°F	36°F	41.5°F	47°F	20°F	23.5°F	27°F	30.5°F	39.5°F

Table 2 Saturated steam

Sample Flowrate lb/h	Cooling water flowrate 1.6 GPM						Cooling water flowrate 4.8 GPM						Cooling water flowrate 9.5 GPM					
	Boiler pressure psig																	
	7.5	15	43	101	145	290	7.5	15	43	101	145	290	7.5	15	43	101	145	290
11	5.5°F	5.5°F	7°F	9°F	11°F	11°F	3.5°F	3.5°F	5.5°F	5.5°F	7°F	7°F	2°F	2°F	2°F	3.5°F	3.5°F	3.5°F
22	-	12.5°F	14.5°F	14.5°F	14.5°F	16°F	-	7°F	7°F	7°F	7°F	9°F	-	2°F	3.5°F	3.5°F	3.5°F	3.5°F
33	-	-	16°F	18°F	18°F	20°F	-	-	9°F	11°F	11°F	12.5°F	-	-	3.5°F	3.5°F	5.5°F	7°F
44	-	-	-	21.5°F	23.5°F	25°F	-	-	-	14.5°F	16°F	16°F	-	-	-	7°F	9°F	11°F
66	-	-	-	-	38°F	38°F	-	-	-	-	25°F	25°F	-	-	-	-	16°F	18°F
88	-	-	-	-	-	50.5°F	-	-	-	-	-	36°F	-	-	-	-	-	23.5°F
110	-	-	-	-	-	63°F	-	-	-	-	-	45°F	-	-	-	-	-	30.5°F
132	-	-	-	-	-	75.5°F	-	-	-	-	-	54°F	-	-	-	-	-	38°F
155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions (approximate) in inches

A	B	C	D	E	F	G	H	J
16.1	13.8	11.8	3.5	1.0	0.9	0.5	17.7	2.2



Weights (approx.)

Cooler	6.8 lbs.
SCS20 system	9.3 lbs.

Installation

See Installation and Maintenance Instructions for full details, as insufficient information is given here for safe installation.

Notes on installation

WARNING:-To avoid the risk of scalding, it is essential that cooling water is flowing before opening the sample inlet valve. Always close the sample inlet valve before turning off the cooling water.

Sample pipework becomes very hot under normal working conditions, and will cause burns if touched.

We recommend the use of corrosion resistant pipework suitable for the fluid being sampled.

Keep the length of all pipe runs to the minimum.

Cooling water must be clean and free from scale forming salts.

The sample cooler must be mounted vertically.

The cooling water inlet is connected in 1/2" nominal bore pipe via an inlet valve.

The cooling water outlet should be piped to an open drain or tundish.

The sample inlet pipe should be in 6 mm O/ D tube.

The sample inlet to the cooler can be taken direct from a boiler or steam line isolating valve, or if a Spirax Sarco TDS control system is fitted, from the take-off point provided on the blowdown valve.

We recommend that a tundish piped to drain is located under the outlet, with sufficient space below it for a beaker or similar sample container.

Maintenance

No routine maintenance is required.

How to order

1 - Spirax Sarco SC20 sample cooler - NPT connections.

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