SC20 Food+ and SCS20 Sample Coolers

Description

The Spirax Sarco SC20 sample cooler is used to cool samples of boiler water or steam. The cooler consists of a 316L stainless steel coil, through which the sample flows, and a 316L stainless steel body, through which cooling water flows and utilises a counter current flow to maximise cooler efficiency.

The unit is provided with integral pre-drilled mounting brackets to allow simple installation at point of use. The SC20 is also available with a clamp adaptor for connecting to an industry standard ½" sanitary clamp fitting.

SC20 Food+

Designed, manufactured and approved for Steam and Condensate applications. This product is intended to be connected into a system that can operate a food contact compliant process.

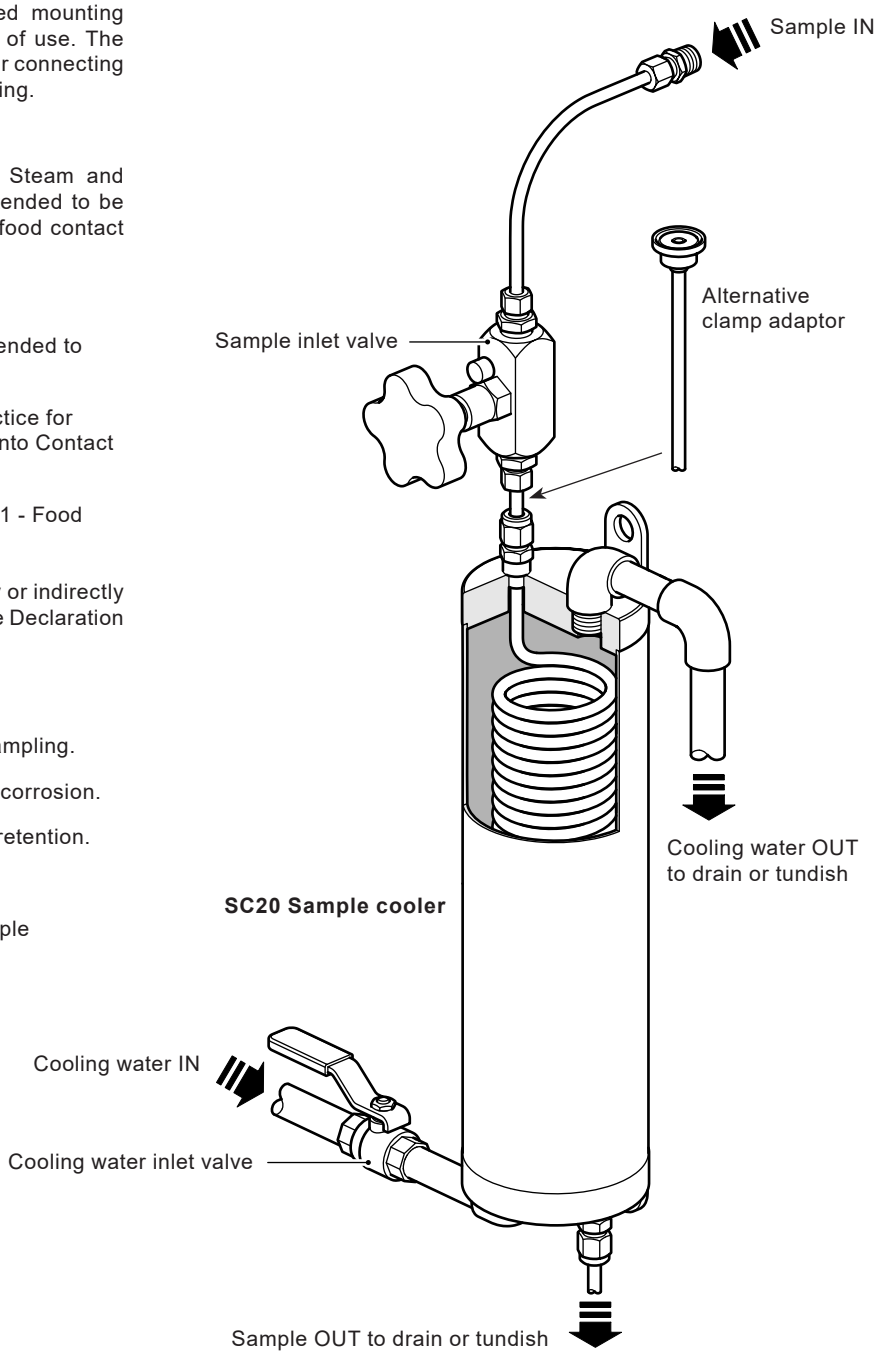
This product complies with:

- (EC)1935:2004 Materials and Articles Intended to come into Contact with Food
- (EC)2023:2006 Good Manufacturing Practice for Materials and Articles Intended to come into Contact with Food
- FDA Code of Federal Regulations - title 21 - Food and Drugs

A list of the materials that could come directly or indirectly into contact with foodstuffs can be found in the Declaration of Compliance available for this product.

Principal features:

- For boiler water, steam, or condensate sampling.
- Stainless steel body and coil to minimise corrosion.
- Self-draining design to eliminate sample retention.
- Counter current flow for efficient cooling.
- Integral mounting bracket to facilitate simple installation.



SC20 Sample cooler

Available types

SC20 Food+ Range
BSP connections (6 mm (0.24") O/D tube).

NPT connections (6 mm (0.24") O/D tube). A ¼" NPT male x 6 mm (0.24") O/D stud coupling is supplied loose for connecting the sample inlet tube to an NPT inlet valve or fitting.

A sample cooler (BSP or NPT) with a clamp adaptor suitable for connection to an industry standard ½" ASME BPE compatible sanitary clamp fitting (clamp not supplied).

SCS20 Range
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.

Note: **ONLY the SC20 product is available as EC1935:2004 compliant. The SCS20 systems are not.**

Note: The SC20 sample cooler is not polished or specially treated internally, and the internal finish of the coil is not specified.

Stainless steel couplings are also available separately:-
¼" BSP male x 6 mm (0.24") O/D tube.
¼" NPT male x 6 mm (0.24") O/D tube.

Certification
The SC20 Food+ can be supplied with the following certification if requested at the time of ordering:

- EN 10204 3.1 material certificates - Chargeable
- EC1935:2004 Declaration of Compliance - F.O.C.
- Declaration of Conformity BS EN ISO 14644-1:2015 Class 7 Clean Room - F.O.C.
- TSE-BSE Statement - F.O.C.
- FDA Code of Federal Regulations - title 21 - Food and Drugs - F.O.C

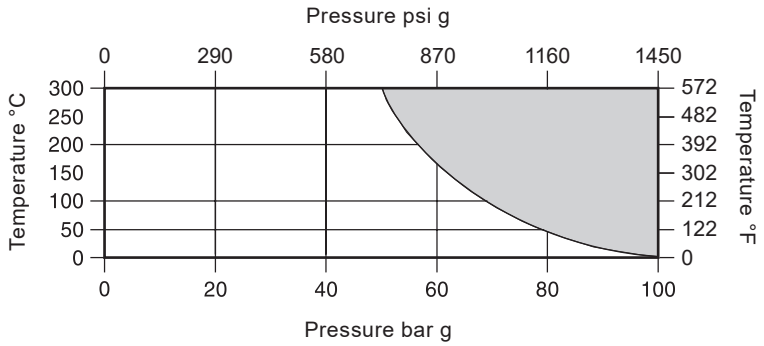
Sizes and pipe connections

Cooling water inlet and outlet connections	BSP T Rp (ISO 7-1) version	½" BSP
	NPT version	½" NPT
	Clamp adaptor versions	½" BSP or ½" NPT
Sample tube inlet and outlet connections	BSP T Rp (ISO 7-1) version	6 mm (0.24") O/D
	NPT version	6 mm (0.24") O/D*
	Clamp adaptor versions	6 mm (0.24") O/D with ½" ASME BPE compatible adaptor for clamp fitting

* A ¼" NPT male x 6 mm O/D stud coupling is provided.

Pressure/temperature limits

Coil



The product **must not** be used in this region.

Body

Maximum design pressure	10 bar g @ 100 °C (145 psi g @ 212 °F)
Maximum design temperature	100 °C @ 10 bar g (212 °F @ 145 psi g)
Designed for a maximum cold hydraulic test pressure of	16 bar g (282 psi g)

Note: The pressure/temperature limits for the clamp adaptor are dependant on the manufacturer's recommendations.

Materials

Coil	Stainless steel 316L (1.4404)
Body	

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 30 l/h is required from a boiler operating at 10 bar g (145 psi g).
For a cooling water flowrate of 0.3 l/s from Table 1 the sample outlet temperature would be 4 °C (39.2 °F) above the cooling water inlet temperature. If the cooling water is at 15 °C (59 °F), the sample temperature would be 19 °C (66.2 °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.

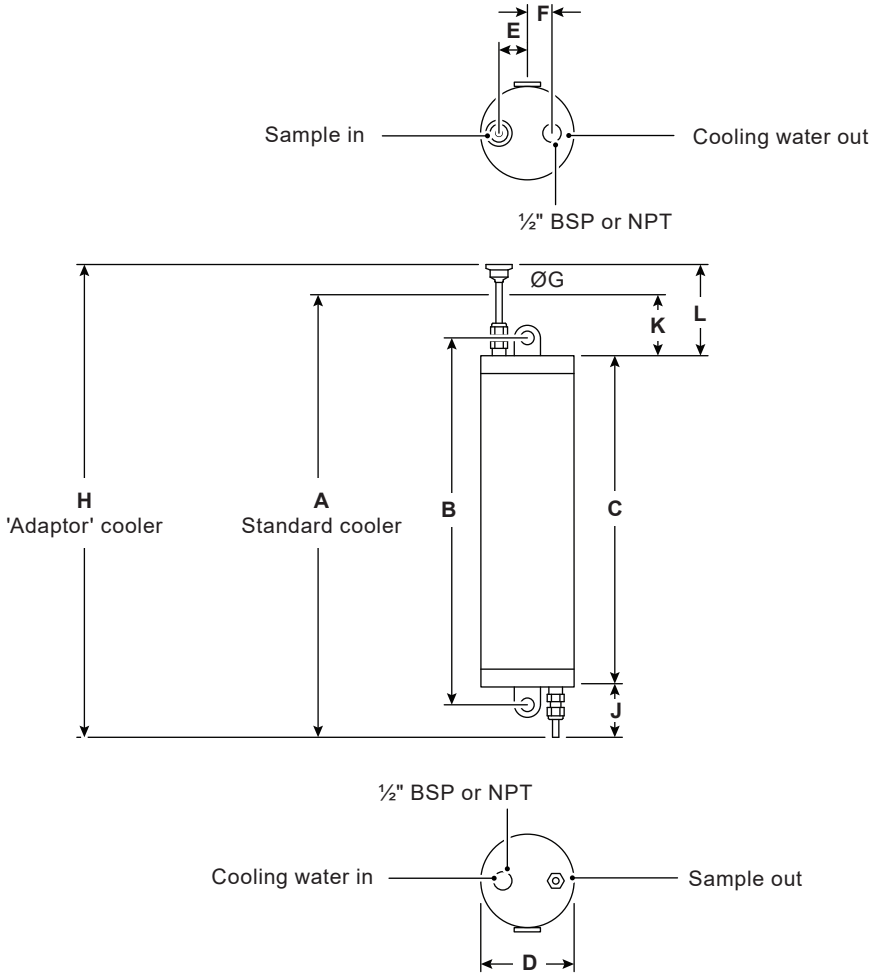
Table 1 Saturated water (e.g. boiler water)

Sample flowrate l/h (g/h)	Boiler pressure bar g (psi g)																				
	Cooling water flowrate 0.1 l/sec (0.02 g/sec)						Cooling water flowrate 0.3 l/sec (0.07 g/sec)						Cooling water flowrate 0.6 l/sec (0.15 g/sec)								
	1 (14.5)	3 (43.5)	7 (101.5)	10 (145)	20 (290)		1 (14.5)	3 (43.5)	7 (101.5)	10 (145)	20 (290)		1 (14.5)	3 (43.5)	7 (101.5)	10 (145)	20 (290)				
10 (2.6)	1 °C (33.8 °F)	1 °C (33.8 °F	3 °C (37.4 °F)	6 °C (42.8 °F	6 °C (42.8 °F		0 °C (32 °F)	0 °C (32 °F)	1 °C (33.8 °F	1 °C (33.8 °F	4 °C (39.2 °F)		0 °C (32 °F)	0 °C (32 °F)	0 °C (32 °F)	0 °C (32 °F)	2 °C (35.6 °F)				
20 (5.2)	2 °C (35.6 °F)	2 °C (35.6 °F)	6 °C (42.8 °F	8 °C (46.4°F)	8 °C (46.4°F)		1 °C (33.8 °F	1 °C (33.8 °F	2 °C (35.6 °F)	2 °C (35.6 °F)	6 °C (42.8 °F		0 °C (32 °F)	0 °C (32 °F)	0 °C (32 °F)	1 °C (33.8 °F	4 °C (39.2 °F)				
30 (7.9)	5 °C (41 °F)	4 °C (39.2 °F)	8 °C (46.4°F)	11 °C (51.8 °F)	11 °C (51.8 °F)		3 °C (37.4 °F)	3 °C (37.4 °F)	4 °C (39.2 °F)	4 °C (39.2 °F)	8 °C (46.4°F)		0 °C (32 °F)	0 °C (32 °F)	2 °C (35.6 °F)	3 °C (37.4 °F)	6 °C (42.8 °F				
40 (10.5)	7 °C (44.6°F)	7 °C (44.6°F)	11 °C (51.8 °F)	13 °C (55.4 °F)	13 °C (55.4 °F)		5 °C (41 °F)	5 °C (41 °F)	6 °C (42.8 °F	6 °C (42.8 °F	10 °C (50 °F		1 °C (33.8 °F	1 °C (33.8 °F	2 °C (35.6 °F)	3 °C (37.4 °F)	8 °C (46.4°F)				
50 (13.2)	10 °C (50 °F	10 °C (50 °F	13 °C (55.4 °F)	15 °C (59 °F)	15 °C (59 °F)		6 °C (42.8 °F	6 °C (42.8 °F	8 °C (46.4°F)	8 °C (46.4°F)	12 °C (53.6 °F)		3 °C (37.4 °F)	3 °C (37.4 °F)	4 °C (39.2 °F)	5 °C (41 °F)	9 °C (48.2°F)				
60 (15.8)	14 °C (57.2 °F)	14 °C (57.2 °F)	16 °C (60.8 °F)	18 °C (64.4 °F)	18 °C (64.4 °F)		9 °C (48.2°F)	9 °C (48.2°F)	10 °C (50 °F	10 °C (50 °F	14 °C (57.2 °F)		4 °C (39.2 °F)	5 °C (41 °F)	5 °C (41 °F)	6 °C (42.8 °F	11 °C (51.8 °F)				
80 (21.3)	16 °C (60.8 °F)	18 °C (64.4 °F)	20 °C (68 °F)	22 °C (71.6 °F)	22 °C (71.6 °F)		11 °C (51.8 °F)	12 °C (53.6 °F)	13 °C (55.4 °F)	14 °C (57.2 °F)	18 °C (64.4 °F)		6 °C (42.8 °F	7 °C (44.6°F)	8 °C (46.4°F)	9 °C (48.2°F)	15 °C (59 °F)				
100 (26.4)	18 °C (64.4 °F)	20 °C (68 °F)	24 °C (75.2 °F)	26 °C (78.8 °F)	27 °C (80.6 °F)		15 °C (59 °F)	16 °C (60.8 °F)	16 °C (60.8 °F)	18 °C (64.4 °F)	22 °C (71.6 °F)		10 °C (50 °F	11 °C (51.8 °F)	12 °C (53.6 °F)	13 °C (55.4 °F)	18 °C (64.4 °F)				
120 (31.7)	22 °C (71.6 °F)	23 °C (73.4 °F)	29 °C (84.2 °F)	30 °C (86 °F)	31 °C (87.8 °F)		17 °C (62.6 °F)	18 °C (64.4 °F)	20 °C (68 °F)	23 °C (73.4 °F)	26 °C (78.8 °F)		11 °C (51.8 °F)	13 °C (55.4 °F)	15 °C (59 °F)	17 °C (62.6 °F)	22 °C (71.6 °F)				

Table 2 Saturated steam

Sample flowrate l/h (g/h)	Boiler pressure bar g (psi g)	Cooling water flowrate 0.1 l/sec (0.02 g/sec)						Cooling water flowrate 0.3 l/sec (0.07 g/sec)						Cooling water flowrate 0.6 l/sec (0.15 g/sec)						
		0.5 (7.25)	2 (29)	5 (72.5)	7 (101.5)	10 (145)	20 (290)	0.5 (7.25)	2 (29)	5 (72.5)	7 (101.5)	10 (145)	20 (290)	0.5 (7.25)	2 (29)	5 (72.5)	7 (101.5)	10 (145)	20 (290)
5 (1.3)		3 °C (37.4 °F)	3 °C (37.4 °F)	4 °C (39.2 °F)	4 °C (39.2 °F)	6 °C (42.8 °F	6 °C (42.8 °F	2 °C (35.6 °F)	2 °C (35.6 °F)	3 °C (37.4 °F)	3 °C (37.4 °F)	4 °C (39.2 °F)	4 °C (39.2 °F)	1 °C (33.8 °F)	1 °C (33.8 °F)	1 °C (33.8 °F)	2 °C (35.6 °F)	2 °C (35.6 °F)	2 °C (35.6 °F)
10 (2.6)			7 °C (44.6°F)	8 °C (46.4°F)	8 °C (46.4°F)	8 °C (46.4°F)	9 °C (48.2°F)		4 °C (39.2 °F)	4 °C (39.2 °F)	4 °C (39.2 °F)	4 °C (39.2 °F)	5 °C (41 °F)			2 °C (35.6 °F)	2 °C (35.6 °F)	2 °C (35.6 °F)	2 °C (35.6 °F)
15 (4.0)				9 °C (48.2°F)	10 °C (50 °F	10 °C (50 °F	11 °C (51.8 °F)			5 °C (41 °F)	6 °C (42.8 °F	6 °C (42.8 °F	7 °C (44.6°F)				2 °C (35.6 °F)	3 °C (37.4 °F)	4 °C (39.2 °F)
20 (5.2)					12 °C (53.6 °F)	13 °C (55.4 °F)	14 °C (57.2 °F)				8 °C (46.4°F)	9 °C (48.2°F)	9 °C (48.2°F)				4 °C (39.2 °F)	5 °C (41 °F)	6 °C (42.8 °F
30 (7.9)						21 °C (69.8 °F)	21 °C (69.8 °F)					14 °C (57.2 °F)	14 °C (57.2 °F)					9 °C (48.2°F)	10 °C (50 °F
40 (10.5)							28 °C (82.4 °F)						20 °C (68 °F)						13 °C (55.4 °F)
50 (13.2)							35 °C (95 °F)						25 °C (77 °F)						17 °C (62.6 °F)
60 (15.8)							42 °C (107.6 °F)						30 °C (86 °F)						21 °C (69.8 °F)
70 (18.5)																			

Dimensions (approximate) in mm (inches)



A	B	C	D	E	F	G	H	J	K	L
410 (16.1)	350 (13.8)	316 (12.4)	90 (3.5)	27 (1.0)	23.5 (0.9)	13 (0.5)	450 (17.7)	47 (1.85)	47 (1.85)	87 (3.42)

Weights (approximate) in kg (lbs)

Cooler	3.6 kg (7.9 lbs)
SCS20 system	4.7 kg (10.4 lbs)

How to order

Example:
1 off Spirax Sarco SC20 sample cooler having BSP T Rp (ISO 7-1) connections.

Spare parts

The spare parts available are listed below.
No other parts are supplied as spares.

Available spares

Component	Stock number
Sample inlet valve BSP T Rp (ISO 7-1)	4037900
Sample inlet valve NPT	4037990
Stud coupling carbon steel BSP T Rp (ISO 7-1)	0962373
Stud coupling stainless steel BSP T Rp (ISO 7-1)	0963243
Stud coupling ¼" NPT male x 6 mm stainless steel (for connecting SC20 to an NPT valve or fitting)	0963209