Cert. No. LRQ 0963008

ISO 9001

TI-P403-09
AB Issue 9

SC20
Sample Coolers

Description

The Spirax Sarco SC20 sample cooler is used to cool samples of boiler water or steam. 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 clamp adaptor for connecting to an industry standard ½" sanitary clamp fitting.

Principal features:

- For boiler water, steam, or condensate sampling.
- Stainless steel body and coil to minimise corrosion.
- Counter current flow for efficient cooling.

Available types:

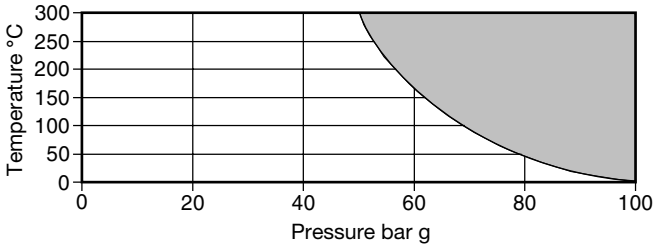
BSP connections (6 mm O/D tube).
NPT connections (6 mm O/D tube). A ¼" NPT male x 6 mm O/D stud coupling is supplied loose for connecting the sample inlet tube to an NPT inlet valve or fitting.
BSP sample cooler kit (SCS20), complete with sample inlet valve, cooling water inlet valve, and carbon steel fittings.
A kit (SCS20), as above, but with stainless steel fittings.
A sample cooler (BSP or NPT) with a clamp adaptor suitable for connection to an industry standard ½" sanitary clamp fitting (clamp not supplied).
Special sanitary sample coolers (SSC20) are also available in BSP and NPT. They have a stated coil internal finish. See separate literature for further details.

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 O/D tube.
¼" NPT male x 6 mm O/D tube.

Pressure / temperature limits

Coil



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

Body

Maximum design pressure	10 bar g @ 100°C
Maximum design temperature	100°C @ 10 bar g
Designed for a maximum cold hydraulic test pressure of 16 bar g	

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

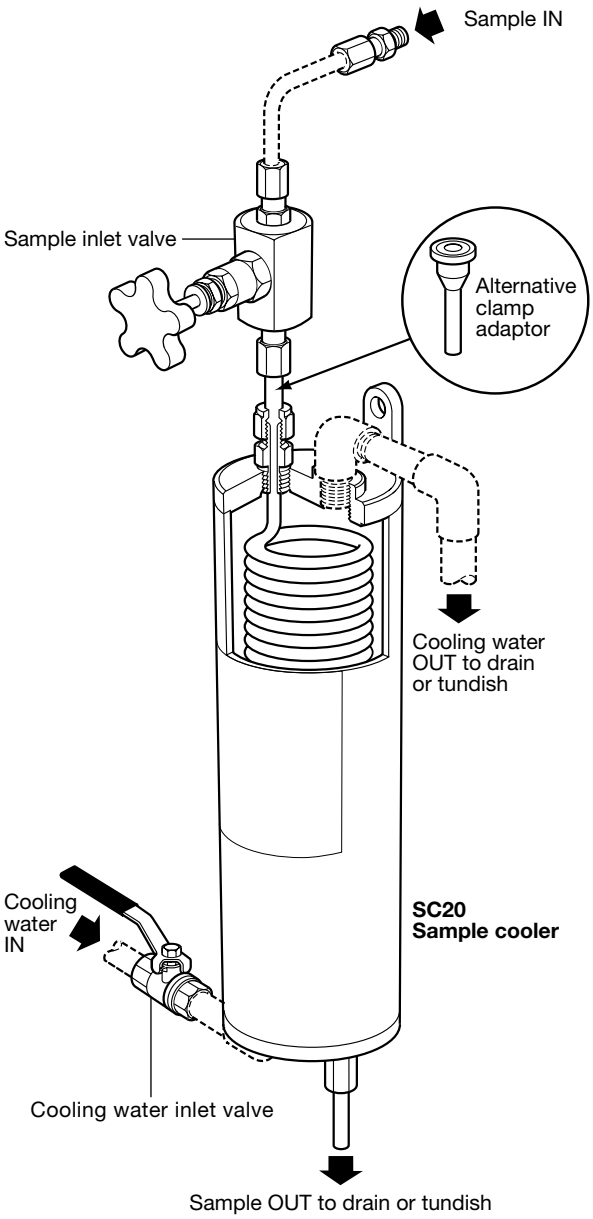
Materials

Coil	Austenitic stainless steel	Grade 316L
Body	Austenitic stainless steel	

Sizes and pipe connections

Cooling water inlet and outlet connections	BSP version	½" BSP
	NPT version	½" NPT
	Clamp adaptor versions	½" BSP or ½" NPT
Sample tube inlet and outlet connections	BSP version	6 mm O/D
	NPT version	6 mm O/D*
	Clamp adaptor versions	6 mm O/D with ½" adaptor for clamp fitting

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



Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to change the specification without notice.

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. For a cooling water flowrate of 0.3 l/s from Table 1 the sample outlet temperature would be 4°C above the cooling water inlet temperature. If the cooling water is at 15°C, the sample temperature would be 19°C.
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)

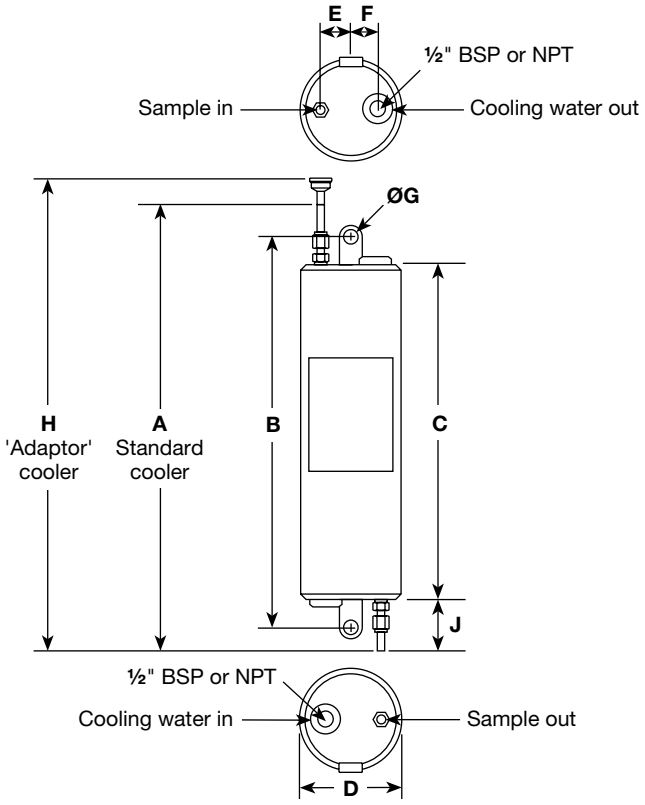
Sample flowrate l/h	Cooling water flowrate 0.1 l/sec					Cooling water flowrate 0.3 l/sec					Cooling water flowrate 0.6 l/sec				
	Boiler pressure bar g														
	1	3	7	10	20	1	3	7	10	20	1	3	7	10	20
10	1°C	1°C	3°C	6°C	6°C	0°C	0°C	1°C	1°C	4°C	0°C	0°C	0°C	0°C	2°C
20	2°C	2°C	6°C	8°C	8°C	1°C	1°C	2°C	2°C	6°C	0°C	0°C	0°C	1°C	4°C
30	5°C	5°C	8°C	11°C	11°C	3°C	3°C	4°C	4°C	8°C	0°C	0°C	2°C	3°C	6°C
40	7°C	7°C	11°C	13°C	13°C	5°C	5°C	6°C	6°C	10°C	1°C	1°C	2°C	3°C	8°C
50	10°C	10°C	13°C	15°C	15°C	6°C	6°C	8°C	8°C	12°C	3°C	3°C	4°C	5°C	9°C
60	14°C	14°C	16°C	18°C	18°C	9°C	9°C	10°C	10°C	14°C	4°C	5°C	5°C	6°C	11°C
80	16°C	18°C	20°C	22°C	22°C	11°C	12°C	13°C	14°C	18°C	6°C	7°C	8°C	9°C	15°C
100	18°C	20°C	24°C	26°C	27°C	15°C	16°C	16°C	18°C	22°C	10°C	11°C	12°C	13°C	18°C
120	22°C	23°C	29°C	30°C	31°C	17°C	18°C	20°C	23°C	26°C	11°C	13°C	15°C	17°C	22°C

Table 2 Saturated steam

Sample flowrate kg/h	Cooling water flowrate 0.1 l/sec						Cooling water flowrate 0.3 l/sec						Cooling water flowrate 0.6 l/sec					
	Boiler pressure bar g																	
	0.5	2	5	7	10	20	0.5	2	5	7	10	20	0.5	2	5	7	10	20
5	3°C	3°C	4°C	5°C	6°C	6°C	2°C	2°C	3°C	3°C	4°C	4°C	1°C	1°C	1°C	2°C	2°C	2°C
10	-	7°C	8°C	8°C	8°C	9°C	-	4°C	4°C	4°C	4°C	5°C	-	1°C	2°C	2°C	2°C	2°C
15	-	-	9°C	10°C	10°C	11°C	-	-	5°C	6°C	6°C	7°C	-	-	2°C	2°C	3°C	4°C
20	-	-	-	12°C	13°C	14°C	-	-	-	8°C	9°C	9°C	-	-	-	4°C	5°C	6°C
30	-	-	-	-	21°C	21°C	-	-	-	-	14°C	14°C	-	-	-	-	9°C	10°C
40	-	-	-	-	-	28°C	-	-	-	-	-	20°C	-	-	-	-	-	13°C
50	-	-	-	-	-	35°C	-	-	-	-	-	25°C	-	-	-	-	-	17°C
60	-	-	-	-	-	42°C	-	-	-	-	-	30°C	-	-	-	-	-	21°C
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions (approximate) in millimetres

A	B	C	D	E	F	G	H	J
410	350	300	90	27	23.5	13	450	55



Weights (approximate)

Cooler	3.1 kg
SCS20 system	4.2 kg

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	4037900
Sample inlet valve NPT	4037990
Stud coupling carbon steel BSP	0962373
Stud coupling stainless steel BSP	0963243
Stud coupling ¼" NPT male x 6 mm stainless steel (for connecting SC20 to an NPT valve or fitting)	0963209

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions supplied with the product.

WARNING:

- **To avoid the risk of scalding, it is essential that a full flow of cooling water is present 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.**

Installation note:

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 note:

No routine maintenance is required.

How to order

Example: 1 off Spirax Sarco SC20 sample cooler having BSP connections.