



# 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 1/2" 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:

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.

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

Special sanitary sample coolers (SSC20) are also available in NPT. They have a stated coil internal finish. See separate literature for further details.

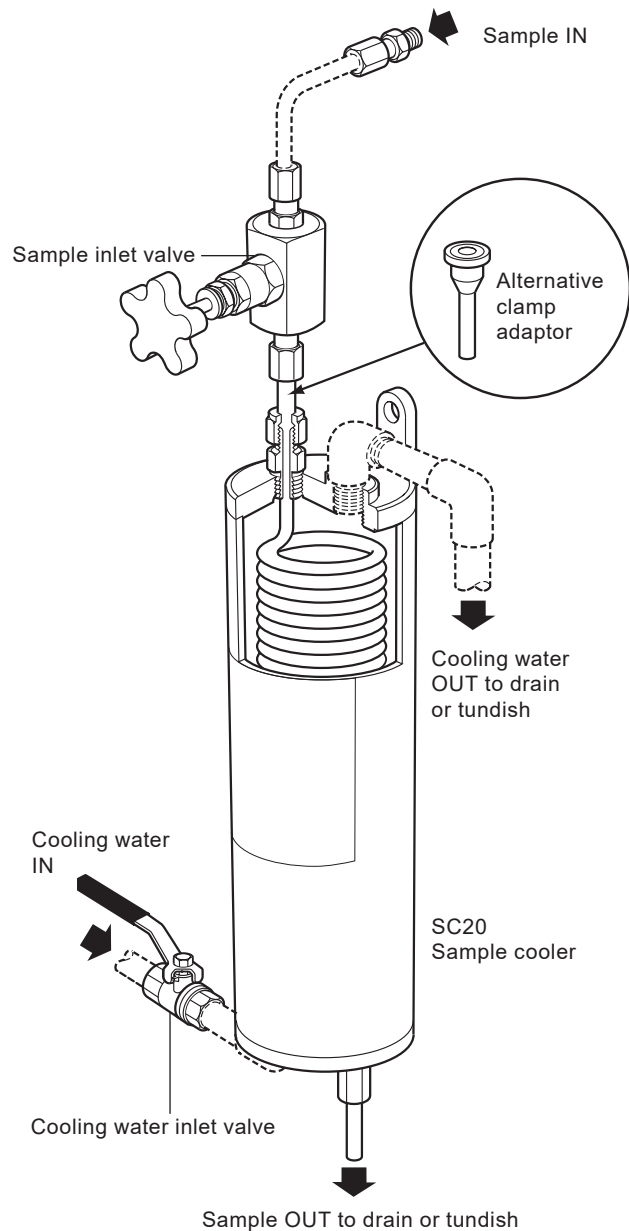
**Note: The SC20 sample cooler is not polished or specially treated internally, and the internal finish of the coil is not specified.**

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

## Sizes and pipe connections

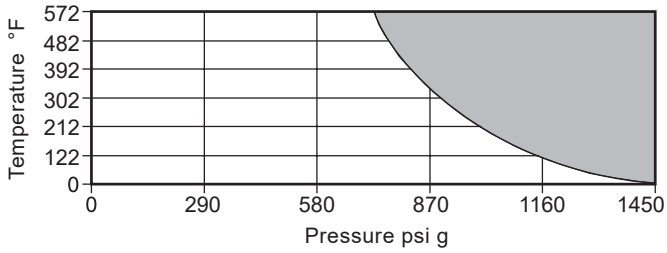
<b>Cooling water inlet and outlet connections</b>	NPT version	1/2" NPT
	Clamp adaptor versions	1/2" NPP
<b>Sample tube inlet and outlet connections</b>	NPT version	6 mm O/D*
	Clamp adaptor versions	6 mm O/D with 1/2" adaptor for clamp fitting

\* A 1/4" 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 145 psi g @ 212 °F

Maximum design temperature 212 °F @ 145 psi g

Designed for a maximum cold hydraulic test pressure of 282 psi g

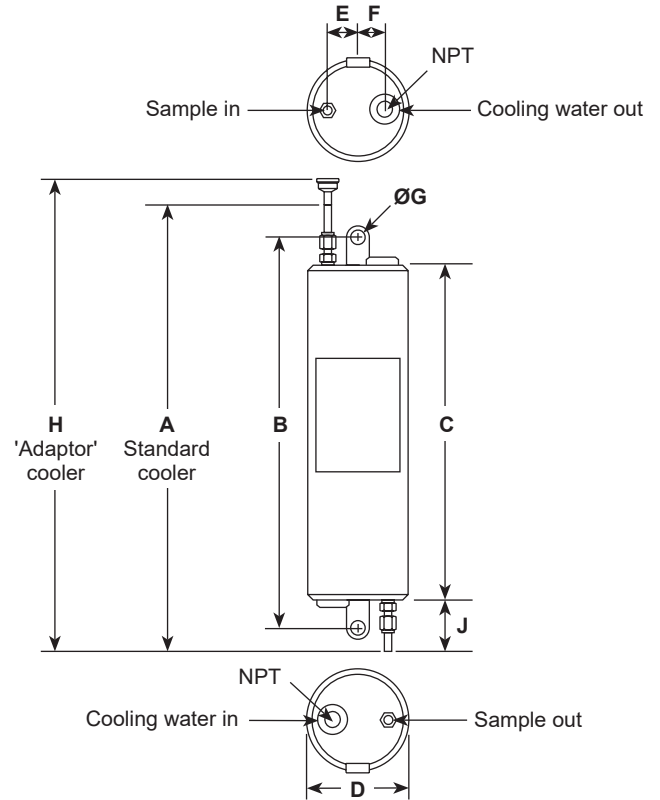
**Note:** The pressure/temperature limits for the clamp adaptor are dependant on the manufacturer's recommendations

## Materials

Coil	Austenitic stainless steel	Grade 316L
Body	Austenitic stainless steel	

## 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 (approximate) in pounds

Cooler	6.8 lbs
SCS20 system	9.3 lbs

## 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 psi g. 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 psi g														
	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	48.5 °F	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 psi g																	
	7.5	15	43	101	145	290	7.5	15	43	101	145	290	7.5	15	43	101	145	200
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	7 °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	-	-	-	11 °F	16 °F	16 °F	-	-	-	7 °F	9 °F	11 °F
66	-	-	-	-	38 °F	38 °F	-	-	-	14.5 °F	25 °F	25 °	-	-	-	-	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## Accessories and Spare Parts

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

### Available spares:

Component	Stock number
Sample inlet valve NPT	4037990
Stud coupling 1/4" 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. Installation & Maintenance Instructions, IM-P403-66.

### Maintenance note:

No routine maintenance is required.

## How to order

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