

Sample Coolers

Purpose

To cool hot water or steam samples for easy handling and effective sample collection.

The Neptune Sample Cooler is suitable for use on hot water, saturated steam, or superheated steam services.

Features

MODELS SC-316 & SC-600

- Rugged all-welded construction
- Internal baffles to insure maximum heat transfer
- Heat exchange area—one sq. ft.
- Design pressure—3500 psi at 750°F
- Available in all 316SS or with Inconel 600 coil and 316SS shell

MODEL SC-100 (Cleanable Sample Cooler)

Same features as SC-316 above except:

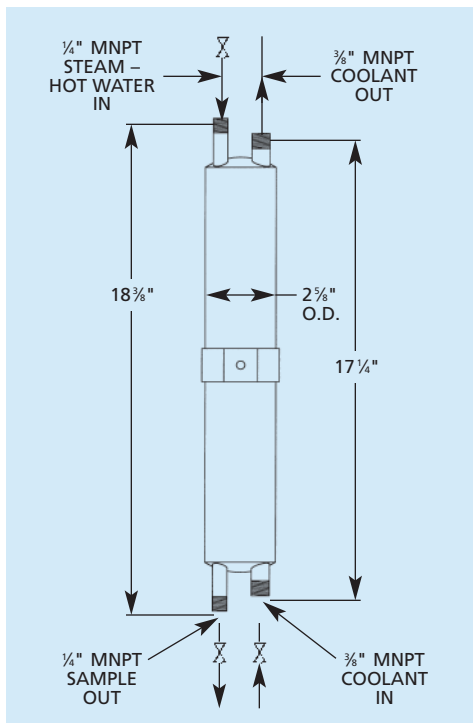
- 316SS coil with carbon steel shell
- Designed for simple removal of coil for inspection and cleaning
- Design pressure—1500 psi at 600°F
- Tubing tails which may be formed by a tubing bender for various angles of sample entry and exit



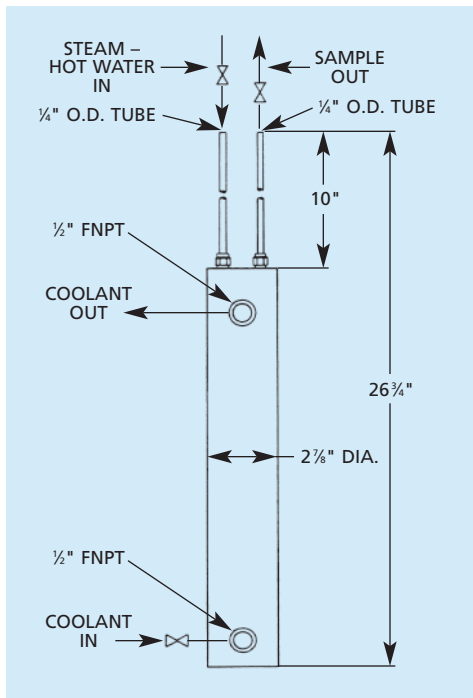
**MODEL
SC-316 & SC-600
Sample Coolers**



**MODEL SC-100
Cleanable
Sample Cooler**



MODEL SC-316 & SC-600
Sample Coolers



MODEL SC-100
Cleanable Sample Cooler

Specifications

MODEL	Material		Pressure Rating		Water Flow Pressure Drop	
	COIL	SHELL	COIL	SHELL	COIL	SHELL
SC-316*	316SS	316SS	3500 psi	250 psi	55 psig @ 250 lbs/hr	3 psig @ 3 gpm
SC-600*	Inconel 600	316SS	3500 psi	250 psi	55 psig @ 250 lbs/hr	3 psig @ 3 gpm
SC-100**	316SS	Steel	1500 psi	200 psi	55 psig @ 250 lbs/hr	3 psig @ 3 gpm

*Maximum Operating Temperature: 750°F

**Maximum Operating Temperature: 600°F

Performance

Assuming a coolant inlet of approximately 55°F (12°C) and exit of approximately 120°F (50°C) and a sample exit of approximately 110°F (43°C), the cooler will provide performance approximately per the ranges described below:

HOT WATER SAMPLES:

- At 250°F (120°C), approximately 1500 CC/Min of sample will be produced using 1 gallon per minute of coolant.
- At 700°F (370°C), approximately 950 CC/Min of sample will be produced using 2.5 gallons per minute of coolant.

SATURATED STEAM VAPOR: The sample inlet and exit valves can be used to create various operating pressures in the cooler for producing samples from saturated steam vapor.

- At 175 psia operating pressure, 640 CC/Min of sample can be produced using approximately 3.0 gpm of coolant.
- At 25 psia operating pressure, 300 CC/Min of sample can be produced using approximately 1.5 gpm of coolant.

SUPER HEATED STEAM: Max. sample inlet temperature of 750°F (400°C). (See chart below.)

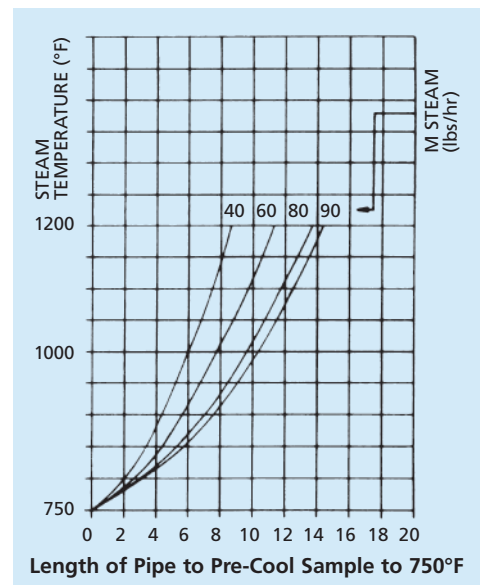
- 1,000 psia cooler operating pressure produces 640 CC/Min of sample at 3.5 gpm coolant flow.
- 20 psia cooler operating pressure produces 315 CC/Min of sample at 1.75 gpm coolant flow.

Installation

Proper installation requires valves on sample inlet and cooling water inlet for hot water service. An additional valve must be installed on the sample outlet for all vapor or steam services to obtain required operating pressures in the coil.

Proper installation in superheated steam service also requires precooling the sample to 750°F, the maximum design operating temperature of the Neptune Sample Cooler.

Precooling can be accomplished by installing a pipe between the main steam header and the sample cooler to radiate excess heat. The length of the pipe is determined from the chart at right.



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