

Alfa Laval Pharma-line Point of Use

Point of Use cooler module

Introduction

Alfa Laval Pharma-line Point of Use is a compact module developed for point of use cooling in pharmaceutical water systems.

The module is designed as a subloop in hot pharmaceutical water systems keeping it sanitized when not in use.

Application

Alfa Laval Pharma-line Point of Use is designed for cooling Water For Injection (WFI) and Purified Water (PW).

It is delivered as a complete module with heat exchanger, insulation, cabinet, valves, and pitot tube arrangement for connection to WFI/PW main loop.

Benefits

- Easy installation: The Pharma-line Point of Use is built as a plug-and-play module
- Hygienic design: Reynolds number >4000 maintained in stand-by with main-line velocity >1 m/s. No internal welds, and fully drainable with no dead legs
- Full supply chain transparency with Alfa Laval Q-doc documentation
- Fast response: Cold purified water is available within seconds
- Minimized waste of purified water due to the low hold-up volume and fast response

Standard design and configuration

Alfa Laval Pharma-line Point of Use has a compact tube-in-tube design. It is designed with focus on high hygienic standards in line with ASME BPE. The design features full drainability, no internal welds, no dead legs, no crevices and all product wetted parts are electropolished.

Alfa Laval Pharma-line Point of Use pitot tube arrangement ensures that throttling valves are not needed for the sub-loop, significantly reducing the total pressure drop in the distribution loop.



Alfa Laval Pharma-line Point of Use module is available in three standard sizes: PoU200, PoU300 and PoU400. Within the standard configurations there are many different options to select among, as example pneumatic or manual point of use valve, and different sizes of pitot tubes with ASME BPE, ISO2037, ISO1127 standards. The pitot tubes have option with isolation valves and return bend and extension tubes.

Operating principles

Stand-by mode

When the module is in stand-by mode the N/O recirculation valve is open. To maintain optimum hygienic conditions when the module is in 'stand-by' mode, hot water from the main WFI/PW loop enters via a pitot tube and flows continuously through the point of use cooler and back to the main loop.

The pitot tube ensures that the product is kept circulating in the point-of-use cooler, keeping it self-sanitized.

The velocity in the main line must be >1.0 m/s in order to achieve a turbulent flow during stand-by mode.



Figure 1. Stand-by mode

- A (User point valve) = Close
- B (Cooling media valve) = Close
- C (Recirculation valve) = Open

Cooling mode

In manual module turn the air switch to ON mode, the N/O recirculation valve will be closed, and the N/C cooling media valve will be opened.

In automatic module client should close the N/O recirculation valve and open the N/C cooling media valve with their control system.

To extract cold WFI/PW, open the user point valve and be aware that for the first few seconds the water will be hot.

The cooling media valve opens. The recirculation valve is closed. Cold WFI/PW is available with seconds.

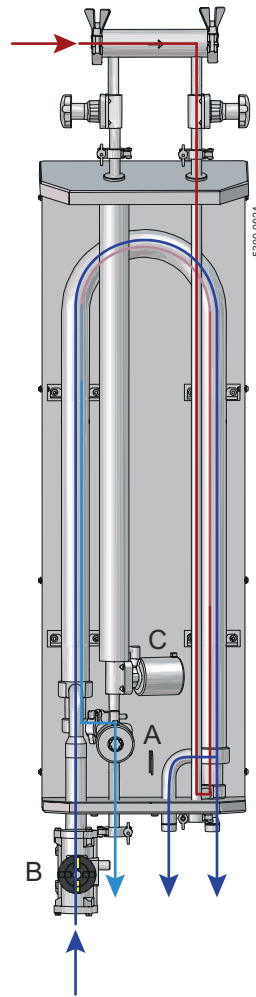


Figure 2. Cooling mode

- A (User point valve) = Open
- B (Cooling media valve) = Open
- C (Recirculation valve) = Close

Dimension

Model	User point valve type	Approx. effective length (m)	Heat transfer area (m ²)	Dimension (H x W x D) mm
Pharma-line PoU200 Man	Manual	2	0.33	1383 x 380 x 297
Pharma-line PoU200 Auto	Pneumatic	2	0.33	1383 x 380 x 297
Pharma-line PoU300 Man	Manual	3	0.50	1883 x 380 x 297
Pharma-line PoU300 Auto	Pneumatic	3	0.50	1883 x 380 x 297
Pharma-line PoU400 Man	Manual	4	0.66	2383 x 380 x 297
Pharma-line PoU400 Auto	Pneumatic	4	0.66	2383 x 380 x 297

Documentation

Alfa Laval Pharma-line Point of Use is delivered along with Q-doc, a standard documentation including drawings, material certificates, instruction manual, pressure test report, WPS, WPQ, weldlog etc.

Technical data

Technical data	
Heat transfer area	0.33-0.66 m ²
Connections product side	Tri-clamps ASME BPE
Connections utility side	One inlet: 1¼" Female. Two outlets: ¾" Male BSP threaded
Wetted part material	316 L stainless steel, seamless tubes
Surface finish (wetted part)	Ra<0.5µm Electropolished
Non-wetted part material in module	Insulation: Armaflex (thickness: 20mm) Cabinet: 304 Brushed plate (thickness: Back plate 1,5mm. Front plate 1,25mm)
Welding procedure	ASME IX
Weight of module	22-46 kg
Design Pressure	Pneumatic user point valve (PTFE diaphragm) 6 barg Pneumatic user point valve (EPDM diaphragm) 10 barg Manual user point valve (PTFE diaphragm) 10 barg
Design temperature	140°C
Pressure vessel code	Normally not applicable due to small internal volume. See drawing for details

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