



FrontLine

Plate heat exchanger

APPLICATIONS

- Pasteurization
- General cooling/heating of dairy, brewery, beverage and food products
- Heating/cooling in the pharmaceutical industry.

STANDARD DESIGN

The frame

The plates and the pressure plate are suspended from an upper carrying bar and located by a lower guiding bar, both of which are fixed to the support column. The tightening bolts are equipped with ball bearing washers in order to facilitate opening and closing of the unit. The frame and support column have adjustable feet.

One unit may contain several heat exchangers, separated by connection plates with interchangeable connections.

The Front plate

The Front plates are designed to meet the highest requirements in food processing. The combination of high pressing depth and a pattern with relatively few contact points provides longer operation time without interruptions. The distribution pattern assures an even flow over the entire plate. The ports have a diameter enabling cleaning in place (CIP) with the same flow used in the process itself.

The plate pack

The chevron corrugation of the plates provides a passage between the plates and supports each plate against the adjacent one. It also enhances the turbulence, resulting in efficient heat transfer.

Different chevron angles are available to reach the optimal high heat transfer at a given pressure drop. A unique distribution area provides an efficient flow over the plate surface. The Alfa Laval hanging system enables easy handling of the plates in the frame. Furthermore the corner guiding provides a strong plate pack. The plates are reversible and have parallel flow, which means that only one type of gasket is needed.

WORKING PRINCIPLE

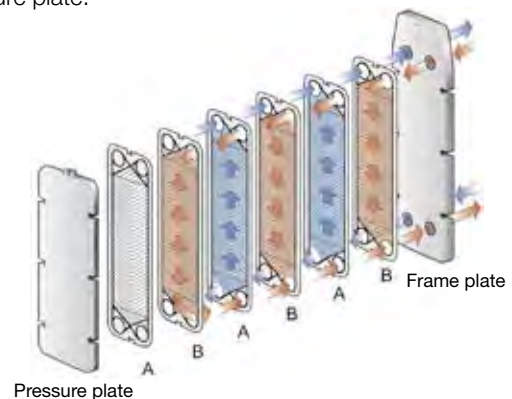
A plate heat exchanger consists of a pack of corrugated metal plates with port holes for the passage of two fluids between which heat transfer will take place.



Front8

The plate pack is assembled between a fixed frame plate and a movable pressure plate and compressed by tightening bolts.

The plates are fitted with a gasket which seals the inter-plate channel and directs the fluids into alternate channels. The number of plates is determined by the flow rate, physical properties of the fluids and the temperature program. Connections may be located in the frame plate and the pressure plate.



Flow principle of FrontLine plate heat exchanger

STANDARD MATERIALS

Frame

Frame and pressure plate in solid or clad stainless steel or surface coated. All wetted parts in acid proof stainless steel. Other surfaces in various grades of stainless steel. Movable nuts on tightening bolts in chromium plated brass.

Plate type

Front6, Front8, Front10 and Front15

Other plates of the FrontLine series are the WideStream and Gemini plates.

Plates

Stainless steel AISI 316, Titanium or SMO.

Gaskets

Nitrile-FDA or EPDM-FDA.

The FrontLine plates are supplied with glue-free Clip-On gaskets, which are easy to replace even with the plates still hanging in the frame. The material of gaskets are selected for safe use in connection with pharmaceutical and food products.

TECHNICAL DATA

Mechanical design pressure (g) / temperature

FRM solid stainless steel	10 bar / 150°C
FRH* solid stainless steel	16 bar / 150°C
FRD solid stainless steel	21 bar / 150°C

RM clad stainless steel	10 bar / 150°C
RH clad stainless steel	16 bar / 150°C
RD clad stainless steel	21 bar / 150°C

RMS surface coated	10 bar / 150°C
RHS surface coated	16 bar / 150°C

Complies with the European Pressure equipment Directive (PED). May carry the CE mark depending on the design conditions. Complies with Alfa Laval Sound Engineering Standard (ALS).

* Not applicable for Front 15

Connections

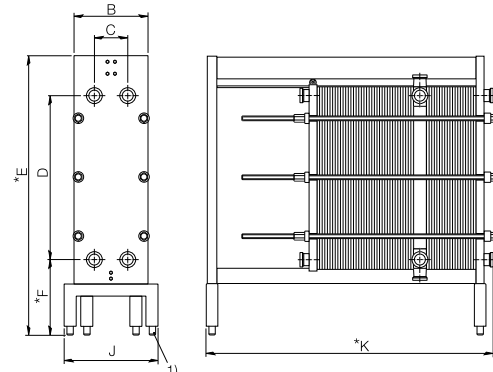
DIN, SMS, Tri-CLAMP, BS/RJT and IDF/ISO male parts. Others on request.

Plates	Front6	Front8	Front10	Front15
Plate pattern	Chevron	Chevron	Chevron	Chevron
Surface m ²	0.18	0.38	0.62	0.91
Overall dim., mm (inch)	1000 x 250 (39.4 x 9.8)	1250 x 375 (49.2 x 14.8)	1500 x 500 (59.1 x 19.7)	1750 x 625 (68.9 x 24.6)
Port dim., mm (inch)	55 (2.2)	80 (3.1)	105 (4.1)	150 (5.9)
Thickness, mm	0.5/0.6/0.7	0.5/0.6/0.7	0.5/0.6/0.7	0.5/0.6/0.7

Options

- Thermometer pocket and nib with ventilation cock *
- Thermometer pocket *
- Connection for 51 mm pressure transmitter *
- Protection sheet
- Bolt protections of stainless steel
- 3-A finish
- Extended legs
- Extra standard wrench or pneumatic tightening tool
- Test certificates and material certificate
- Testing by authorized inspection companies

* At through pass corners in connection plates.



1) Adjustable feet +/- 40 mm.

Measurements mm / (inch)	Measurements mm / (inch)			
	Front6	Front8	Front10	Front15
B	370 (14.6)	492 (19.4)	670 (26.4)	803 (31.6)
C	129 (5.1)	220 (8.7)	324 (12.8)	400 (15.7)
D	859 (33.8)	1095 (43.1)	1324 (52.1)	1524 (60)
E*	1420 (55.9)	1850 (72.8)	2167 (85.3)	2605 (102.6)
F*	400 (15.7)	500 (19.7)	500 (19.7)	700 (27.6)
J	520 (20.5)	670 (26.4)	850 (33.5)	970 (38.2)
K*min	1000 (39.4)	1440 (56.7)	1400 (55.1)	1588 (62.5)
K*max	2500 (98.4)	3860 (152)	5000 (197)	6400 (252)

* Variable dimension depending on various components.

Connection mm (inch)	Connection mm (inch)			
	Front6	Front8	Front10	Front15
Diameter	51 (2)	76 (3)	76/101.6 (3/4)	101.6/150 (4/6)

Capacity l/h	Capacity l/h			
	Front6	Front8	Front10	Front15
Pasteurization	15000	35000	65000	100000
Heating/cooling	15000	35000	65000	150000
Water	30000	75000	130000	200000

Overall length varies depending on numbers of plates and connecting plates. Recommended free space around the unit is 1.5 meter (5 feet) at sides and frame head end.

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How to contact Alfa Laval

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