

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

Alfa Laval reserves the right to change specifications without prior notification.

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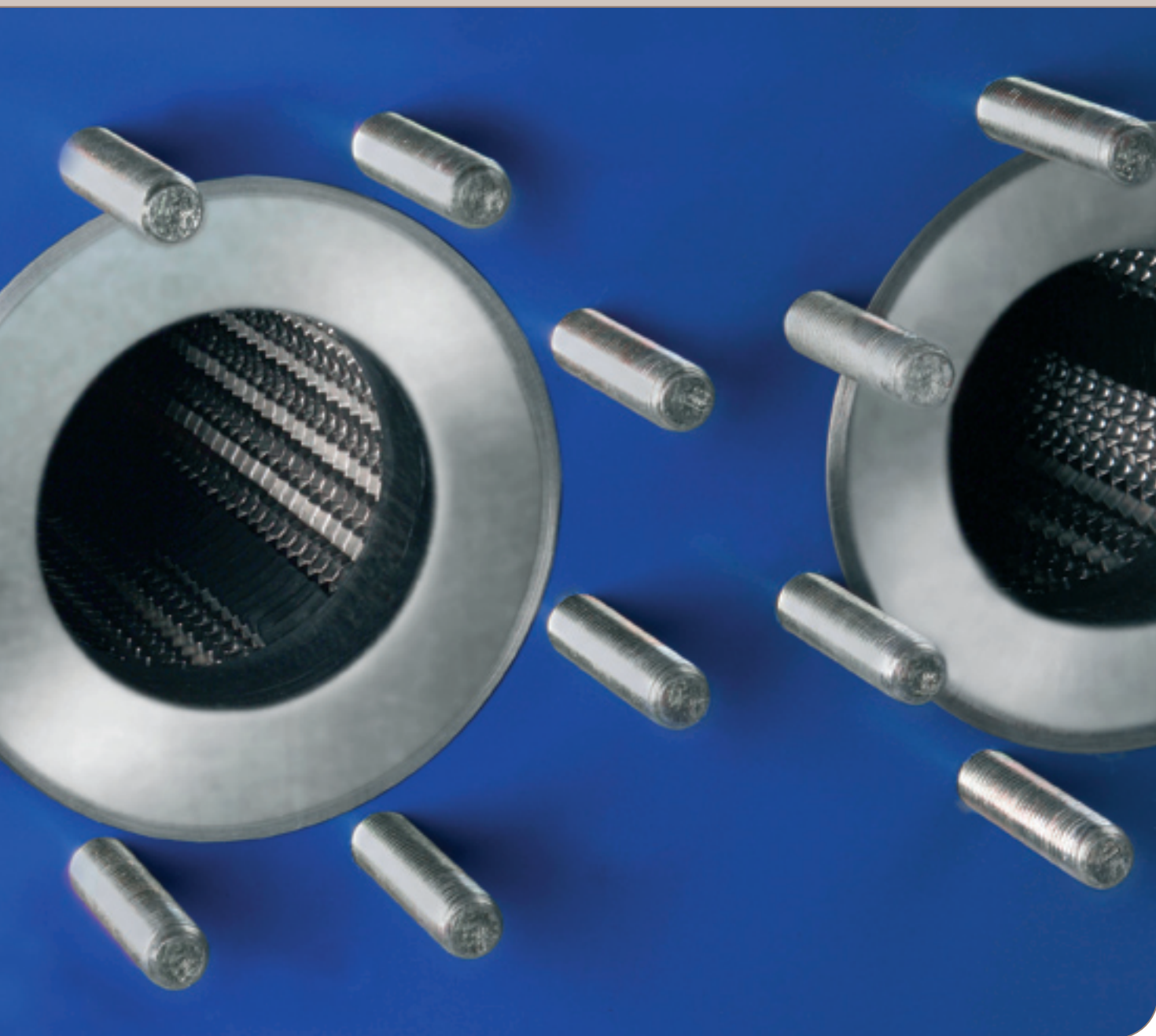
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Alfa Laval plate heat exchangers

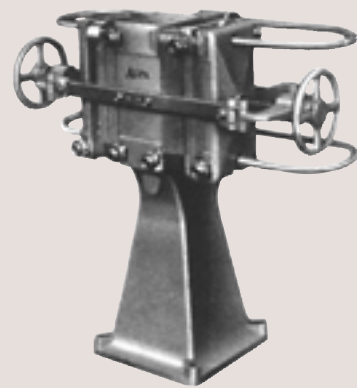
A product catalogue for HVAC



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Six sound reasons to buy your PHEs from the market leader



Alfa Laval supplied the first plate heat exchangers to the dairy industry in 1931. Plates were 5-10 mm thick with a milled pattern, compared with 0.4 mm today. In developing our range of plate heat exchangers, we have focused on cost-efficiency.

1. Technology that saves you money

The result of decades of development and testing, Alfa Laval plate heat exchangers utilise well-proven materials and advanced designs that optimize performance. Most important of all, they reduce your operating costs and save you money.

2. Service-friendly designs

Service-friendly designs ensure that even the largest Alfa Laval PHE can be serviced rapidly and easily by one person using standard tools. This reduces downtime, enhances safety and ensures a longer equipment life-time.

3. A wide range of solutions

Let us advise you on the correct solutions for your specific needs. Alfa Laval PHEs come in a wide range of sizes and capacities. Different plate patterns are available for various duties and performance specifications. A range of pressing depths from 1.5 mm to 11 mm ensures an optimal plate design for any duty. Two-pass plate packs can give double capacity in the same floor space.

4. Full compliance with PED

All Alfa Laval PHEs comply with the European Pressure Vessel Safety Directive, PED, in terms of mechanical and materials specifications. They can also be delivered according to other relevant standards, such as ASME. Various national codes are also available.

5. A partner you can trust

Genuine application know-how and long experience make Alfa Laval the ideal business partner for heating and cooling. Rely on us to supply the most cost-effective solution for your specific needs – we won't let you down.

6. Fast deliveries and service worldwide

Alfa Laval is a truly global company. Our regional distribution centres serve Alfa Laval facilities and distributors worldwide, ensuring fast delivery to customers. We also have more than 30 Alfa Laval PHE Service Centres throughout the world. Wherever you are, talk to us, we're only a phone call away.

Choosing Alfa Laval makes sound financial sense



Alfa Laval gasketed heat exchangers

Alfa Laval plate heat exchangers (PHEs) are the most cost-efficient solution available for your comfort heating and cooling needs. The result of decades of development and testing, our PHEs utilise well-proven materials and advanced designs that optimise performance and reduce your operating costs. We are the market leader. Our cost-efficient products and unmatched global distribution and service capabilities make us the ideal business partner.

- **Single-step pressing of plates down to 0.4 mm**
- **Unique plate patterns for optimal heat exchange**
- **Clip-on or glued gaskets**

Reliability in a single step

The heat transfer efficiency and degree of process control offered by a PHE depend partly on the thickness of the plates. In today's advanced Alfa Laval units, plates as thin as 0.4 mm, normally in stainless steel, offer highly efficient heat transfer and impressive strength.

Each plate is pressed in a single step in a hydraulic press exerting a pressure of up to 40,000 tons. Thus all plates are identical, minimising the risk of distortion and leakage when hundreds are stacked together in a PHE. When assembled with gaskets, the metal-to-metal contact points on the plates create a flexible, yet mechanically stable construction that can withstand enormous stress.

The pattern of performance

The corrugated pattern on the plates gives parallel flow and strength. The "chocolate" pattern of the distribution area ensures even distribution of the fluid over the plate surface, while the herringbone pattern in the main heat transfer area creates maximum turbulence. Together, these features ensure high heat transfer efficiency and eliminate dead spots that can lead to scaling and corrosion.

With parallel flow, only one plate type and one gasket type are required in the heat exchanger. This means fewer spare parts and simpler installation and maintenance. As the plate corrugations are fully supported diagonally across the entire surface, a higher design pressure can be achieved, or plates can be made thinner.





- Wide range of products for every need
- Extremely reliable
- Highly service-friendly

The seal of approval

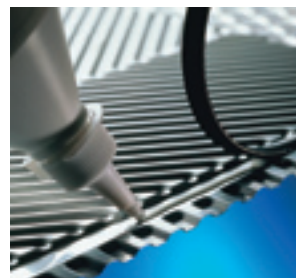
Our ongoing development and testing of gasket materials for specific duties, ensure that Alfa Laval gaskets last longer. Made from nitrile (NBR) or EPDM, they are moulded in one piece, guaranteeing exact gasket geometry. Our “roof-top” gasket profile produces a highly efficient seal, minimising the risk of leakage.

The groove on the plate and the gasket are a perfect match, ensuring full support for the gasket and eliminating the risk of a gasket blow-out. The gasket groove design ensures minimum contact between the media and the gasket, another factor that makes our gaskets last longer.

Bonded for life

Alfa Laval gasket fastening solutions guarantee a perfect result. The Alfa Laval glue-free clip-on gasket makes re-gasketing fast and simple.

Where the PHE is opened frequently, glued gaskets are an excellent solution. Alfa Laval uses two-component, oven-cured epoxy glue to bond the gasket to the plate. This more than doubles gasket life-time compared to using standard rubber glues.

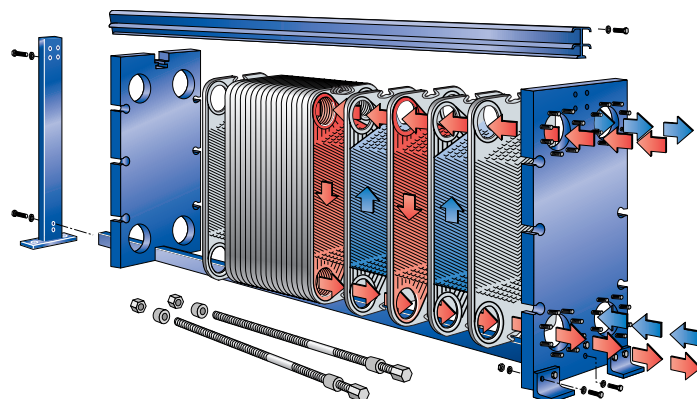


Designed with service in mind

Alfa Laval gasketed PHEs of all sizes can be opened quickly and easily for inspection and gasket replacement by one man using standard tools. They are reassembled just as easily.

Our large units feature Alfa Laval's 5-point alignment system. Precise positioning of the plates horizontally and vertically ensures efficient sealing throughout the plate pack. A roller on the pressure plate, and bearing boxes on the four tightening bolts, make opening and closing an easy task.

Simpler in design, our smaller PHEs are equally service-friendly, while keeping costs to a minimum. During reassembly, alignment of the plate pack is achieved using the round carrying and guide bar. Corner guides lock the plates in position and ensure perfect final alignment.



Heating applications

PHEs in heating systems

Plate heat exchangers are commonly used in all types of heating applications with demands on comfort, reliability and safety. In addition to transferring heat from one circuit to another, the heat exchanger also efficiently handles the pressure differences that normally exist between the primary and secondary sides. The Alfa Laval range of gasketed plate heat exchanger models covers all comfort heating duties like tap water heating and swimming pool heating, from small to large capacities. Thanks to a flexible design, the PHE can be tailor-made to fit your specific needs exactly.

Tap water heating

The advantages of using a plate heat exchanger to produce hot tap water compared to traditional coil in tank systems are numerous. The PHE instantly heats the tap water to the required temperature when it passes through the heat exchanger. This means that hot water is available immediately and at any time. Another benefit with using plate heat exchangers for hot tap water production is that the system requires much less space than a traditional tank and coil system. If solar energy is used to produce hot tap water, a PHE makes it possible to separate the treated water in the solar panels from the tap water circuit. Also, scaling problems and corrosion risks in the solar panels are reduced when separating the circuits with a PHE.

Swimming pool heating

During the summer season when the building's heating system is not used to full capacity, excess heat from the existing heat source can be used for heating outdoor pools. A heat exchanger installed between the swimming pool's circulation system and the building's ordinary heating system separates the circuits and provides pool heating. It's important to remember that addition of chlorine should take place after the water has passed the heat exchanger in order to avoid a high concentration of chlorine flowing through the heat exchanger. It is recommended to use titanium plates when the chloride concentration is high.



Cooling applications

PHEs in cooling systems

The requirement for thermal efficiency - close temperatures - is very high particularly in cooling applications e.g. thermal storage and free cooling. Thanks to Alfa Laval's superior competence in plate pressing, temperature approaches of down to 0.5°C (0.9°F) between the two circuits can be achieved. In addition, this can be accomplished in a single pass connection with all four connections on the front plate, making installation and maintenance very easy.

Central cooling

The main component of the central comfort cooling system is the cold source, commonly a chiller. While cold water or glycol solution is produced on the evaporator side, heat is generated and rejected on the condenser side of the chiller. There are several benefits using a plate heat exchanger in either the hot condenser circuit or the cold evaporator circuit.

The condenser can for example be cooled by an open cooling source like sea or river water. However, the often aggressive media in the open circuits can affect sensitive AC equipment such as the chiller. A plate heat exchanger, installed as a divider between the two systems, eliminates these problems. On the cold evaporator side the plate heat exchanger is used to separate two clean cold circuits, and to protect other equipment from high pressures.

District cooling

District cooling is environment-friendly with better utilisation of cooling capacities and an environment-friendly cooling source. It gives the user convenience and comfort and a better level of equipment redundancy, less need for maintenance and space savings. It also gives the user economical benefits with lower investment costs and flexibility of operation. Using plate heat exchangers in indirect district cooling distribution creates a number of advantages, for example pressure interception between the different circuits. The wide range of Alfa Laval PHE models with different characteristics assures that optimum solutions can be found for virtually all comfort cooling duties.



Product specifications

Small								
	Model	T2	M3	TL3	T5	TL6		M6
Plate types	T2B	M3/M3D	TL3B/TL3P/TL3BD	T5M/T5B	TL6B		M6, M6M, M6B	
Frame type	FG	FG	FG	FG	FM	FG	FD	FG
Height, H [mm]	380	480	790	737	1264	1299	1308	920
Width, W [mm]	140	180	190	245	320	320	320	320
Min standard length, L [mm]	165	400	420	190	615	620	625	500
Max standard length, L [mm]	275	650	1370	365	1665	1670	1675	1500
Vertical port distance, VC [mm]	298	357	668	553	1036	1036	1036	640
Horizontal port distance, HC [mm]	50	60	60	100	140	140	140	140
Max temperature [°C]	180	180	180	180	180	180	180	180
Max pressure [barg]	16	16	16	16	10	16	25	16
PV codes and directives*	ALS	ALS, PED, ASME	ALS, PED, ASME	ALS, PED, ASME	ALS, PED	ALS, PED, ASME	ALS, PED, ASME	ALS, PED, ASME
Flange size	–	–	–	–	DN50/DN65/2"/2,5"		DN50/2"	
Pipe size	3/4"	1¼"	1¼"	2"	2"		2"	
Max. flow rate [kg/s]	2	4	4	14	20		16	

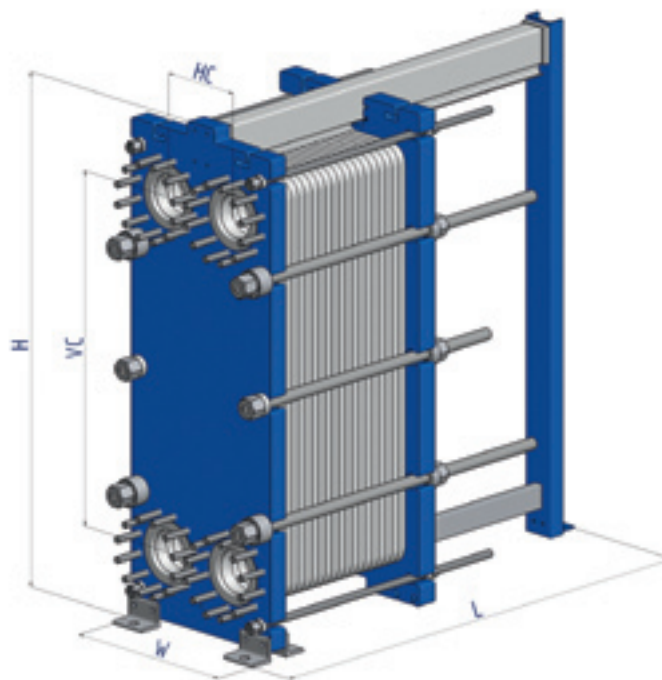
Medium									
Model	M10				TL10				
Plate types	M10M,M10B,M10BD				TL10B				
Frame type	FL	FM	FG	FD	FM	FG	FD	FS	
Height, H [mm]	1084	1084	1084	1084	1885	1923	1923	1923	
Width, W [mm]	470	470	470	470	480	480	480	480	
Min standard length, L [mm]	800	700	700	800	850	850	850	850	
Max standard length, L [mm]	1100	2300	2300	2400	2350	3250	3250	3250	
Vertical port distance, VC [mm]	719	719	719	719	1338	1338	1338	1338	
Horizontal port distance, HC [mm]	225	225	225	225	225	225	225	225	
Max temperature [°C]	130	180	180	180	160	160	160	160	
Max pressure [barg]	6	10	16	25	10	16	25	27.6	
PV codes and directives*	ALS	ALS, PED	ALS, PED, ASME	ALS, PED, ASME	ALS	ALS, PED, ASME	PED	ASME	
Flange size	DN100/4"				DN100/4"	DN100/4"	DN100/4"	4"	
Max. flow rate [kg/s]	50				50				

Large								
Model	TS20			T20				
Plate types	TS20M			T20M, T20B, T20P				
Frame types	FM	FG	FS	FM	FG	FS	FMS	FGS
Height, H [mm]	1405	1405	1435	2150	2150	2180	2595	2595
Width, W [mm]	740	800	800	750	780	780	920	920
Min standard length, L [mm]	900	900	950	1250	1250	1300	1550	1600
Max standard length, L [mm]	2700	2700	2750	3350	3950	4000	3350	3400
Vertical port distance, VC [mm]	698	698	698	1478	1478	1478	1939	1939
Horizontal port distance, HC [mm]	363	363	363	353	353	363	439	439
Max temperature [°C]	180	180	180	180	180	180	180	180
Max pressure [barg]	10	16	30	10	16	30	10	16
PV codes and directives*	ALS, PED	ALS, PED, ASME	PED, ASME	ALS	ALS, PED, ASME	PED, ASME	ALS, PED	ALS, PED, ASME
Flange size	DN200/8"	DN200/8"	DN200/8"	DN200/8"	DN200/8"	DN200/8"	DN200/DN250/8"/10"	DN200/8"
Max. flow rate [kg/s]	190			225				

* PV code ALS is an internal Alfa Laval standard for fulfilment of sound engineering practice. ALS is also valid for PED cat. 0.

** Release July 2009

		
TS6		
TS6M		
MD	FG	FD
940	704	704
330	400	410
500	530	540
1500	1430	1440
640	380	380
140	203	203
180	180	180
25	16	20.6
PED, ASME	ALS, PED, ASME	ASME
DN50/2"	DN65/2"	2.5"
20		



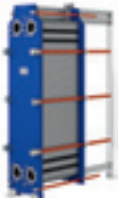
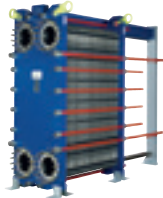
					
M15			TL15**		
M15E,M15B,M15M,M15BD			TL15B		
FM	FG	FD	FM	FG	FS
1885	1885	1980	2672	2752	2752
610	650	650	610	637	646
1150	1110	1140	928	928	928
2050	3210	3240	4368	4368	4368
1294	1294	1294	2035	2035	2035
298	298	321	288	288	288
180	180	180	180	18	180
10	16	25	10	16	30
ALS, PED	ALS, PED, ASME	ALS, PED, ASME	ALS	ALS, PED, ASME	ALS, PED, AMSE
DN150/6"			DIN150/6"		
120			120		

Plate and gasket materials

Plates can be obtained in all pressable materials. The most common materials are: stainless steel Alloy 254 SMO, Alloy 304, Alloy 316 and titanium. Gaskets are available in a wide range of elastomers: The most common are: nitrile and EPDM.

									
MX25			M30			TL35B			
MX25M, MX25B			M30/M30D			TL35B			
FG	FD	FS	FM	FG	FD	FM	FG	FD	FS
2895	2895	2895	2882	2882	2920	3210	3210	3218	3218
920	940	940	1150	1170	1190	1506	1506	1529	1526
1600	1600	1600	1600	1600	1650	2195	2210	2235	2245
5200	5200	5200	5200	5200	5250	4595	4610	3435	3345
1939	1939	1939	1842	1842	1842	2177	2177	2177	2177
439	439	439	596	596	596	578	578	578	578
180	180	180	180	180	180	180	180	180	180
16	25	27.6	10	16	25	10	16	25	30
ALS, PED, ASME	PED, ASME	ASME	ALS, PED, ASME			ALS, PED, ASME			
DN200/DN250/8"/10"	DN200/DN250/8"/10"	8"/10"	DN300/DN350/12"/14"			DIN300/DIN350/12"/14"			
250			497			550			

Insulation

Insulation, designed for HVAC applications, is available for most PHE models. There are two different types of insulation – heating and cooling insulation.

The reason for having two different types is that the mineral wool will be wet from condensing water if used when the heat exchanger temperature is lower than the surrounding temperature. Polyurethane is more expensive than mineral wool, but technically the cooling insulation can be used for heating duties as well.

Drip tray

The Alfa Laval drip tray insulates the heat exchanger from the floor, and it also collects any condensate formed on the outside of the heat exchanger. The drip tray also collects any remaining water (after drainage) in the PHE when the unit is opened for inspection or maintenance. The drip tray consists of 0.75 mm hot galvanized steel plates, 50 mm polyurethane foam, supports of waterproof wood, and a draining valve.



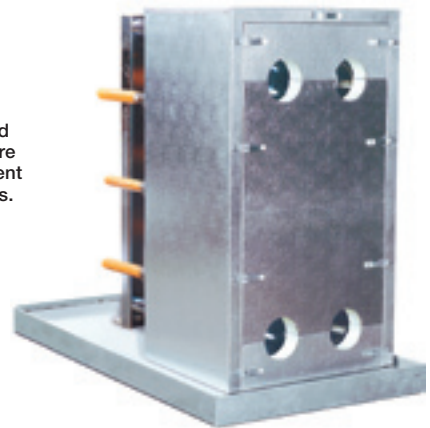
Heating insulation

Heating insulation consists of 65 mm of mineral wool, clad with a 1 mm aluminium sheet on the outside and aluminium foil on the inside. It covers all sides of the PHE including the frame and pressure plate, except downwards. The different parts are held together with snap catches.



Cooling insulation

Cooling insulation consists of 60 mm of polyurethane, clad with a 1 mm aluminium sheet on the outside and aluminium foil on the inside. It covers all sides of the PHE including the frame- and pressure plate, except down-wards, where there is a galvanized drip tray. The different parts are held together with snap catches.



Protection sheet

A protection sheet is a device covering all sides of the plate pack except downwards. It is used to prevent persons from getting injured if a sudden leak of hot, corrosive or toxic media should occur. The Alfa Laval protection sheet consists of one or more aluminium or stainless steel (AISI 304) sheet(s) formed to fit the PHE. On most frames the sheet is fitted between the plate pack and the tightening bolts.



