

Plate heat exchanger construction

A plate heat exchanger consists of a number of heat transfer plates which are held in place between a fixed plate and a loose pressure plate to form a complete unit. Each heat transfer plate has a gasket arrangement which provides two separate channel systems.

The arrangement of the gaskets (field and ring gaskets) results in through flow in single channels, so that the primary and secondary media are in counter-current flow. The media cannot be mixed because of the gasket design.

The plates are corrugated, which creates turbulence in the fluids as they flow through the unit. This turbulence, in association with the ratio of the volume of the media to the size of heat exchanger, gives an effective heat transfer coefficient.

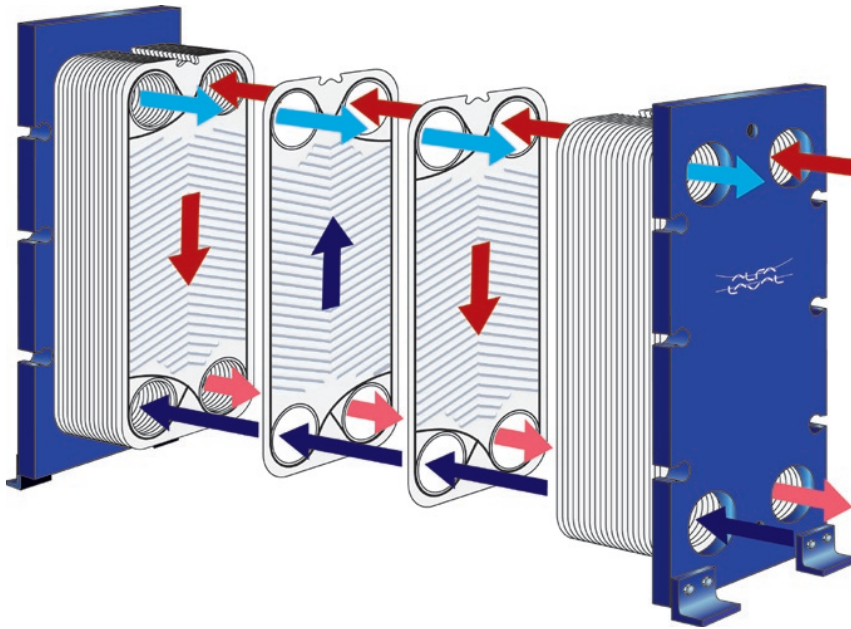


Plate heat exchanger components

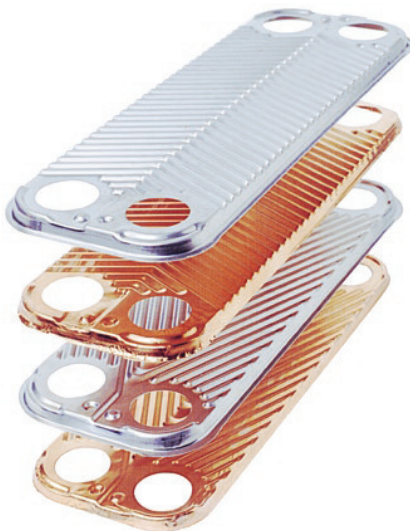
The components consist of a fixed end plate, connections and a loose pressure plate, with carrier bars mounted between them. The plates are hung from the top carrier bar. The carrier bars also serve to position the heat transfer plates. The single plates are pulled together to form a plate pack by means of tightening bolts.

Gasketed plate heat exchangers are available in standard sizes or can be individually prepared.

Gaskets

Materials available

Nitrile rubber	general purpose, oil resistant
EPDM	general purpose, elevated temperatures
HeatSealF™	for high temperatures, specially heating by steam



Brazed plate heat exchangers

A brazed plate heat exchanger is small, light and compact. It does not need gaskets. Instead, it is brazed together using copper to give a strong, compact construction.

This heat exchanger is especially suitable for pressures up to 50 bar and temperatures from -196°C to +550°C.

Fusion-bonded plate heat exchanger

AlfaNova is a new type of plate heat exchanger constructed of 100% stainless steel using AlfaFusion. A unique bonding technology that provides high temperature resistance (up to 550°C) and an exceptional level of hygiene. Copper-free, AlfaNova offers unmatched corrosion resistance.

Assembly

Alfa Laval delivers your heat exchanger assembled and pressure tested. Gasketed heat exchangers can easily be opened for inspection and cleaning. Should the capacity requirements change in the future, additional plates can easily be hung in the frame on site.

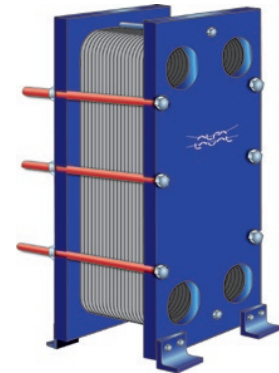
The following sketches show assembly step by step:



1. The frame is put together. It consists of frame and pressure plates, top and bottom carrying bars and connections. The end plate is the first plate to be hung in the frame.



2. Then the plates corresponding to the plate specification are positioned in the frame.



3. The tightening bolts are fitted and the plate pack is tightened by means of a spanner or any other suitable tool to a set measure (specified in the plate specification).

Installation

All the heat exchangers in this brochure have the connections in the frame plate. They are referred to as S1, S2, S3 and S4.

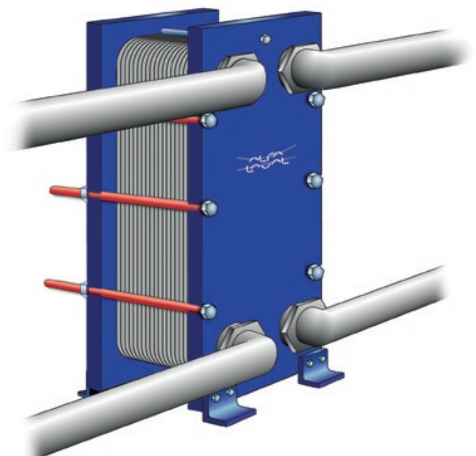
The gasketed heat exchanger can be placed directly on the floor. When possible, it is always safer to secure the unit with foundation bolts. The plate heat exchanger is noted for occupying less space than traditional heat exchangers. When planning the space recommended, it is necessary to leave space on one side of the heat exchanger only. The pipe connections can be either screwed or flanged, depending on the type of heat exchanger selected.

The brazed plate heat exchanger will normally be built into the pipework, or mounted into a small console.

The inlet of one medium is next to the outlet of the other. If S1 is the inlet for medium 1, then S4 is the outlet for medium 2. Every heat exchanger delivered is accompanied by instructions as to which inlet and outlet to use.

Depending upon the type of connection selected, prepare the pipework with screwed thread ends, fit flanges or prepare for welding.

Some of the accessories available for the Alfa Laval plate heat exchangers are insulation, drip trays and protection sheets.



Gasketed plate heat exchanger standing directly on the floor.