Standard design
The plate heat exchanger consists of a pack of corrugated metal plates with portholes for the passage of the two fluids between which heat transfer will take place.

The plate pack is assembled between a frame plate and a pressure plate and compressed by tightening bolts. The plates are fitted with a gasket which seals the channel and directs the fluids into alternate channels. The number of the plates are determined by the flow rate, physical properties of the fluids, pressure drop and temperature program. The plate corrugations promote fluid turbulence and support the plates against differential pressure.

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 columns.

Connections are located in the frame cover, or if either or both fluids make more than a single pass within the unit, in the frame and pressure plates.

Plates can be obtained in all pressable materials. Gaskets are available in a wide range of elastomers.

Flow rate
( Depends on media, permitted pressure drop and temperature program).
Up to 14 m³/h (3100 igph).

Plate types
M3 and M3-X, where M3 provides parallel and M3-X diagonal flow (see figures).

Frame types
FM, FGL and FG.

Working principle
Channels are formed between the plates and corner ports are arranged so that the two media flow through alternate channels. The heat is transferred through the thin plate between the channels, and complete counter current flow is created for highest possible efficiency. No intermixing of the media or leakage to the surroundings will take place as gaskets around the edges of the plates seal the unit. The corrugation of the plates provides a suitable passage between the plates, support of each plate against the adjacent one and a strong turbulence resulting in maximum heat transfer efficiency.
Plate Heat Exchanger

M 3

Standard Materials

Frame
Mild steel, epoxy resin painted

Nozzles
Stainless steel AISI 316, Titanium

Plates
Stainless steel AISI 316, Titanium

Gaskets
M3: NBR (clip-on), EPDM (clip-on).
M3-X: NBR and EPDM, Clip-on and glued, Viton glued

Connections
Straight pipe thread ISO-R 1 1/4”
Straight pipe thread ISO-G 1/4”

Technical Data

Max. working temperature
Rubber gaskets, temperature up to 140°C (284°F)

Max. working pressure
FM: 1.0 Mba (144 psig)
FG, FGL: 1.6 Mba (230 psig)

Heat transfer coefficient
3500 - 5500 W/m²°C (600-1,000 BTU/ft²h°F)

Max. heat exchanger surface
FM, FG: 3.9 m² (41.8 sq ft)
FGL: 2.7 m² (28.9 sq ft)

Heating surface per plate
0.032 m² (0.34 sq ft)

Particulars required for quotation
- Flow rates or heat load
- Temperature program
- Physical properties of liquids in question (if not water)
- Desired working pressure
- Maximum permitted pressure drop

Dimensions (measurement in mm)

A = (2.4 + 0.6 Titanium) x n mm. (n = Number of plates)
(2.4 + 0.5 AISI 316) x n mm. (n = Number of plates)

FM, FG
B = 175 mm
C = 240 mm
350 mm
550 mm

FGL
B = 250 mm
C = 300 mm
500 mm
500 mm

Alfa Laval