



M3

Plate heat exchanger

Applications

General heating and cooling duties. Heating by means of steam.

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 fix frame plate and a movable pressure plate and compressed by tightening bolts. The plates are fitted with a gasket which seals the interplate channel and directs the fluids into alternate channels. The number of plates is 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 plate and the pressure plate are suspended from an upper carrying bar and located by a lower guiding bar, both of which are fixed to a support column.

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

Typical capacities

Liquid flow rate

Up to 4 kg/s (60 gpm), depending on media, permitted pressure drop and temperature program.

Water heating by steam

50 to 250 kW

Plate types

M3 and M3-X, where M3 provides parallel and M3-X diagonal flow (see figures on the next page).
M3D, double wall plates.

Frame types

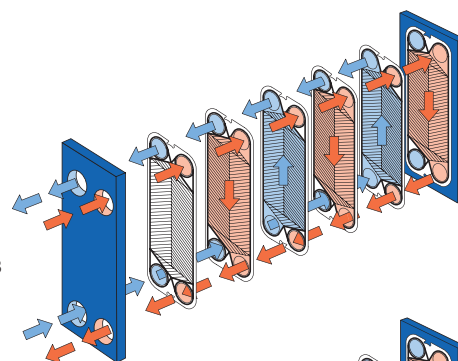
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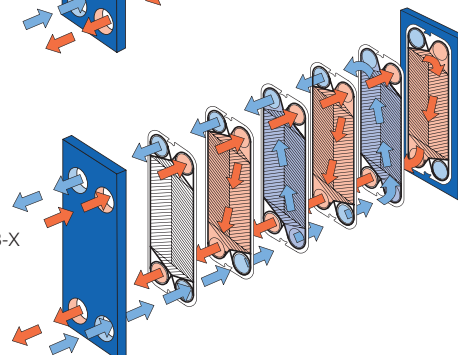
M3-FG PED

Working principle

Channels are formed between the plates and the corner ports are arranged so that the two media flow through alternate channels. The heat is transferred through the plate between the channels, and complete counter-current flow is created for highest possible efficiency. The corrugation of the plates provides the passage between the plates, supports each plate against the adjacent one and enhances the turbulence, resulting in efficient heat transfer.



Flow principle of an M3 plate heat exchanger



Flow principle of an M3-X plate heat exchanger

STANDARD MATERIALS

Frame plate

Mild steel, Epoxy painted

Nozzles

Carbon steel

Pipe: Alloy 316, Titanium

Plates

Stainless steel: AISI 316 or Titanium

Gaskets

M3 Nitrile, EPDM, HeatSealF™

M3X Nitrile, EPDM, Viton®

M3D Nitrile, EPDM

TECHNICAL DATA

Pressure vessel codes, PED, ASME, pvcALS™

Mechanical design pressure (g) / temperature

FG PED, pvcALS™ 1.6 MPa / 180°C

FG ASME 150 psig / 350°F

CONNECTIONS

FG PED Size 1¼" Pipe, thread ISO-R 1¼"

FG pvcALS™ Size 1¼" Pipe, thread ISO-G 1¼" or thread ISO-R1¼"

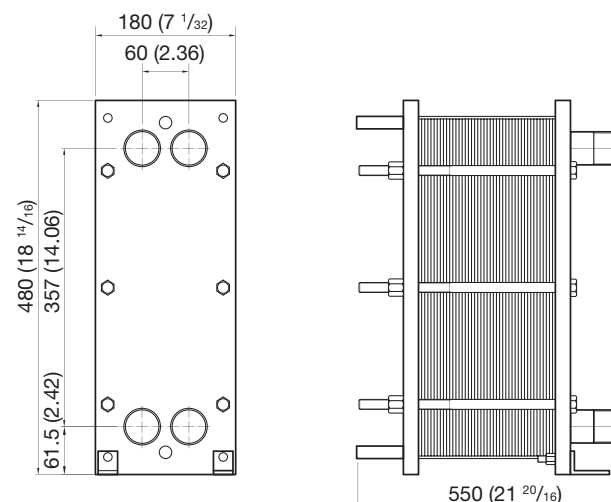
FG pvcALS™ Size 1¼" Internal thread ISO-G 1¼", carbon steel

FG ASME Size 1¼" Pipe, thread NPT 1¼"

Maximum heat transfer surface

3.9 m² (40 sq. ft)

Dimensions



Measurements (mm)

The number of bolts may vary depending on pressure rating.

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
- Available steam pressure

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