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## M10

### 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 50 kg/s (800 gpm), depending on media, permitted pressure drop and temperature program.

##### Water heating by steam

0.7 to 3.0 MW

##### Plate types

M10B, M10M and M10BD, double wall plates.

##### Frame types

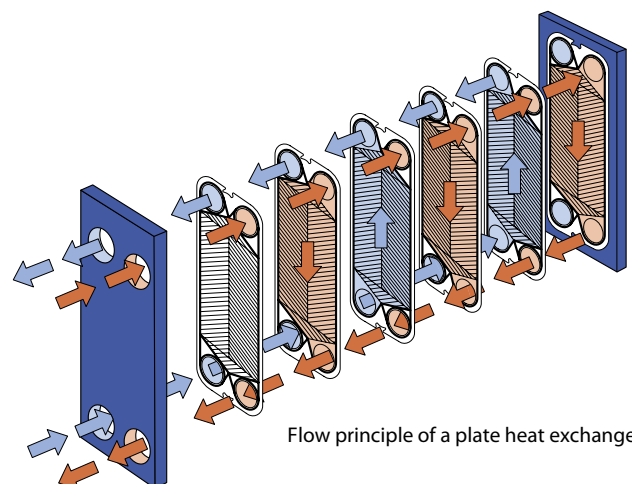
FM, FG and FD

#### 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.



M10-BFG



Flow principle of a plate heat exchanger

## STANDARD MATERIALS

Frame plate  
Mild steel, Epoxy painted

Nozzles  
Carbon steel  
Metal lined: Stainless steel, Titanium  
Rubber lined: Nitrile, EPDM

Plates  
Stainless steel Alloy 316/Alloy 304, Titanium, Alloy 254 SMO,  
Alloy C-276

Gaskets (Clip-on, glued)  
M10B Nitrile, EPDM, HNBR, EPDMF, Viton®G, AL-EPDM  
M10M Nitrile, EPDM, HeatSeal F™, HNBR, EPDMF,  
Viton®G, AL-EPDM

## TECHNICAL DATA

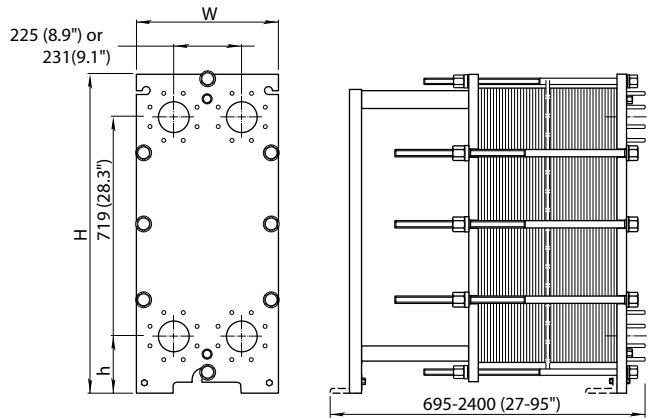
Pressure vessel codes, PED, ASME, pvcALS™  
Mechanical design pressure (g) / temperature  
FM pvcALS™ 1.0 MPa / 180°C  
FM PED 1.0 MPa / 180°C  
FG pvcALS™ 1.6 MPa / 180°C  
FG PED 1.6 MPa / 180°C  
FG ASME 150 psig / 356°F  
FD PED 2.5 MPa / 180°C  
FD ASME 389 psig / 482°F

\*) Frame FG also approved for 1.2 MPa / 200°C to allow use in steam systems without safety valves.

## CONNECTIONS

FM pvcALS™	Size 100 mm	DIN/GB/GOST PN10, ASME Cl.150, JIS 10K
FM PED	Size 100 mm	DIN PN10, ASME Cl. 150
FG pvcALS™	Size 100 mm	DIN/GB/GOST PN10, ASME Cl. 150, JIS 10K
FG PED	Size 100 mm	DIN PN16, ASME Cl. 150
FG ASME	Size 4"	ASME Cl.150
FD PED	Size 100 mm	DIN PN25/ASME Cl.150 / 300
FD ASME	Size 4"	ASME Cl. 300

## Dimensions



## Measurements mm (inch)

Type	H	W	h
M10-FM	1084 (42 11/16")	470 (18 1/2")	215 (8 15/32")
M10-FG	1084 (42 11/16")	470 (18 1/2")	215 (8 15/32")
M10-FD	981 (38 5/8")	470 (18 1/2")	131 (5 1/4")
M10-FD ASME	1084 (42 11/16")	470 (18 1/2")	215 (8 15/32")

The number of tightening bolts may vary depending on pressure rating.

## Maximum heat transfer surface

M10B 90 m<sup>2</sup> (970 sq. ft)  
M10M 60 m<sup>2</sup> (650 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
- Available steam pressure

