

# F SERIES

## PHARMACEUTICAL INDUSTRY HEAT EXCHANGER



The F series heat exchanger is an all stainless steel shell and tube heat exchanger designed for the pharmaceutical industry. The product to be heated or cooled flows through the interior tubes. The media fluid flows through the surrounding shell.

The F series is the ideal heat exchanger for applications such as WFI. Corrugated tubes are used to increase heat transfer rates which makes the F series much more efficient than normal smooth tube heat exchangers.

### APPLICATIONS:

Water to water.  
Steam to water.  
Heat / Cooling.

### MATERIALS:

Shell side: AISI 304 stainless steel or  
AISI 316L stainless steel.  
Tube side: AISI 316L stainless steel.

### CONNECTIONS:

Shell side: DIN flange.  
Tube side: ASME BPE clamp.

### DESIGN CONDITIONS:

Shell side: 10 barg / 185 °C.  
Tube side: 10 barg / 185 °C.

### FINISHING:

Externally polished.  
Tubeside: <0,4 microns (with or without electropolishing)



An expansion bellow is fitted in the outer shell for absorbing the differential expansion between the shell and the inner tubes.



A double tubeplate is fitted to avoid cross contamination between the shell and tube side fluids. The tube side connection is manufactured as an ASME BPE clamp finish.

### RANGE:

Models:	Lengths (m)	Surface area (m <sup>2</sup> )	Shell side Connection	Tube side Connection	Max flow shell (m <sup>3</sup> /hr)	Max flow tubes (m <sup>3</sup> /hr)	Volume shellside (L)	Volume tubeside (L)
F 4 64/17	0,7- 6,0	1,3	DN40	2,5"	17	6	11,7	3,7
F 7 76/17	0,7- 6,0	2,3	DN40	3"	17	10	15,5	6,5
F 13 104/17	0,7- 6,0	4,3	DN65	4"	40	20	29,0	12,0
F 21 129/17	0,7- 6,0	6,8	DN80	5"	55	32	44,4	19,4

By standard the following lengths can be supplied: 0,7 / 1,0 / 1,5 / 2,0 / 3,0 / 6,0

The surface area and volumes shown are for 6 meter length models.

All F 19 models have a tube side connection according to clamp norm DIN32676. All other models are according to clamp ASME BPE.