

Hydraulic Oil Coolers - Series FM

PILAN Shell and Tube Heat Exchangers are designed in a three passes tube stack arrangement with cooling fluid inlet and outlet in opposite sides and counter current fluids. Tube stack is fully floating type thus thermal stresses are minimised while maintenance operations are eased.

PILAN® range of Marine Shell & Tube Heat Exchangers are suitable for any sort of heat transfer fluids, heating or cooling process fluids. Its use is restricted to liquid phase fluids and material compatibility should be observed.

MAWP: oil 14 bar, water 10 bar * MAWT: 120°C (180°C with VITON seals)

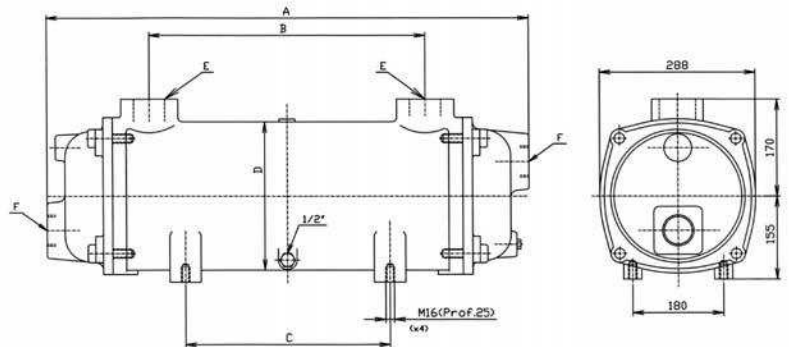
* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



Dimensions

Model	A	B	C	D	E-F	Weight
TP-F1M	754	330	236	Ø278	3"	47
TP-F2M	900	476	382	Ø278	3"	57
TP-F3M	1.077	654	560	Ø278	3"	68
TP-F4M	1.280	856	762	Ø278	3"	79
TP-F5M	1.484	1.060	966	Ø278	3"	91
TP-F6M	1.790	1.364	1.270	Ø278	3"	105

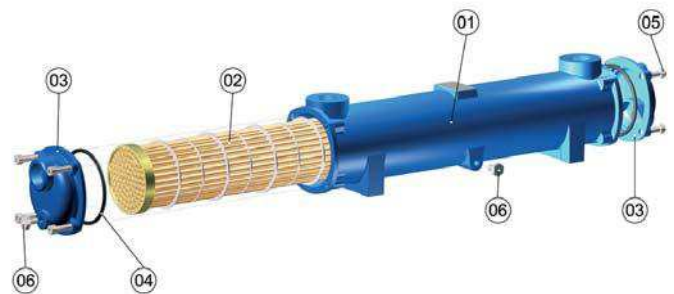
Length Units expressed in mm, Diametres in Inches / Weight in Kgs
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



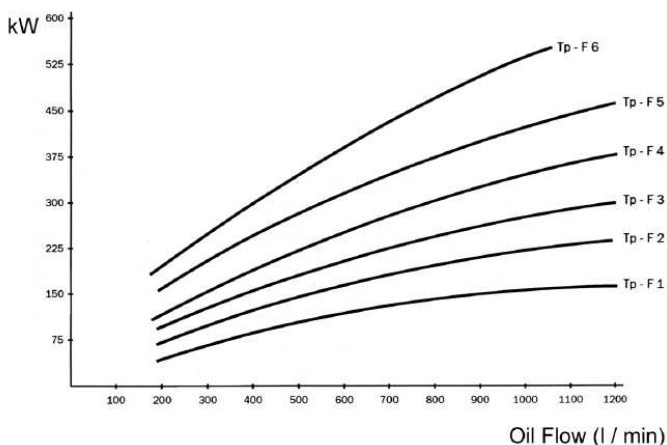
Parts and Materials

Part	Name	Material
1	Shell	Aluminium /Bronze/Cast Iron
2	Tube Stack	
2.1	Tubes	Copper-Nickel / St. Steel / Copper
2.2	Tube plates	Brass / Bronze
2.3	Baffles	Aluminium
2.4	Welding	Tin welded 60/40
3	End caps	Brass / Bronze
4	Seals	NBR / Viton
5	Cover screws	Steel
6	Drain plugs	Brass

Remarkd materials denote standard construction for Marine Units.



Performance Graphs



Graphs were plotted using the parametres shown in the right side table.
For oil pressure drop graphs see separated sheet.

Flow Rate

Model	Heat dissipated (kW)	Oil flow (l/min)	Water flow (l/min)	Oil pressure drop (bar)	Water pressure drop (bar)	Surface (m2)
TP-F1M	133	720	360	0,36	0,09	7,20
TP-F2M	180	780	390	0,50	0,13	9,14
TP-F3M	250	840	420	0,62	0,17	11,81
TP-F4M	325	900	450	0,76	0,25	14,60
TP-F5M	410	960	480	1	0,32	17,30
TP-F6M	500	900	450	1,16	0,52	21,54

Maximal Fresh Water Flow Rate Capacity: 800 l/min (500 l/min if sea water). This table means a typical performance of the shown units at given average process data of oil outlet temperature : 50°C; Water Inlet Temperature: 25°C, Viscosity of Oil: 38Cst with SAE 30 type and 50°C. Any other change in the chosen parametres could result in a different oil cooler selection.

Temperature Correction Factors

When temperature gap between oil outlet and water inlet exceeds the given 25°C the following correction factors should be used:
10°C: 0.4 / 15°C: 0.6 / 20°C: 0.8 / 30°C: 1.2 / 35°C: 1.4 / 40°C: 1.6 (multiply KW by the suitable correction factor).

Flow Rate Correction Factors

For water flow rates other than 50% of the oil flow rate, the following correction factors should be used:
25%: 0.8 / 100%: 1.2 (multiply the flow rate by the suitable correction factor).