

**Hydraulic Oil Coolers - Series EM**

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)

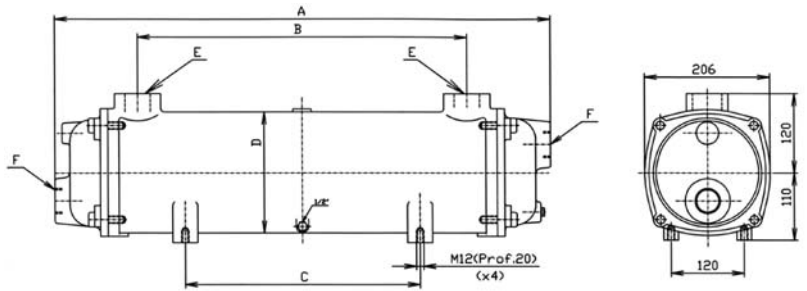
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



**Dimensions**

Model	A	B	C	D	E-F	Weight
TP-E1M	675	372	239	Ø198	2"	33
TP-E2M	816	513	380	Ø198	2"	39
TP-E3M	998	696	560	Ø198	2"	45
TP-E4M	1.204	901	766	Ø198	2"	54
TP-E5M	1.408	1.102	968	Ø198	2"	64
TP-E6M	1.712	1.406	1.272	Ø198	2"	74

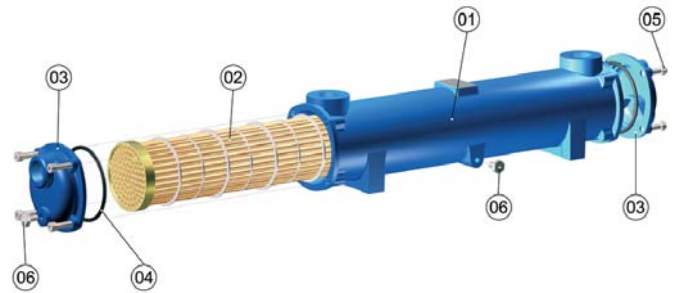
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



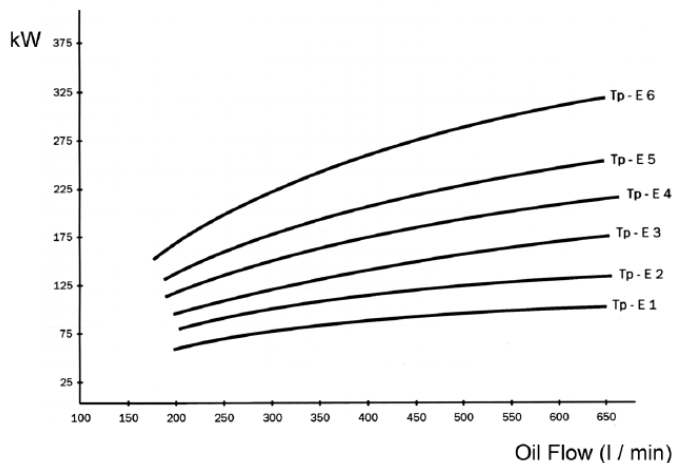
**Parts and Materials**

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-E1M	76	320	160	0,44	0,09	3,27
TP-E2M	106	360	180	0,64	0,13	4,24
TP-E3M	134	400	200	0,90	0,20	5,45
TP-E4M	175	420	210	1,10	0,25	6,82
TP-E5M	205	400	200	1,15	0,28	8,22
TP-E6M	240	360	180	1,10	0,28	10,27

Maximal Fresh Water Flow Rate Capacity: 340 l/min (215 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).