

## Hydraulic Oil Coolers - Series AM

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)

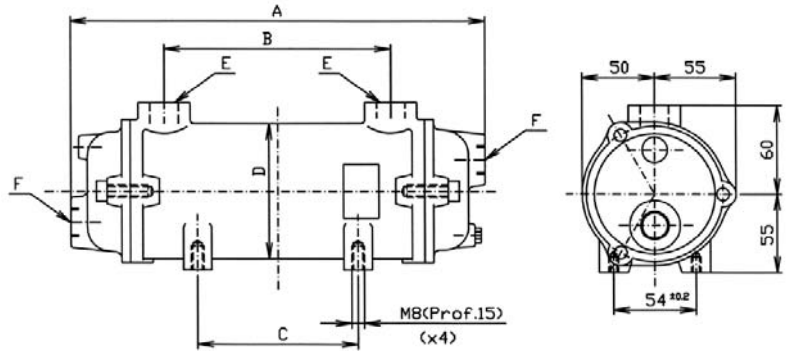
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



### Dimensions

Model	A	B	C	D	E-F	Weight
TP-A1M	195	72	38	Ø86	3/4"	3
TP-A2M	263	138	103	Ø86	3/4"	3,5
TP-A3M	349	225	189	Ø86	3/4"	4
TP-A4M	448	326	288	Ø86	3/4"	4,7
TP-A5M	576	450	415	Ø86	3/4"	5,5

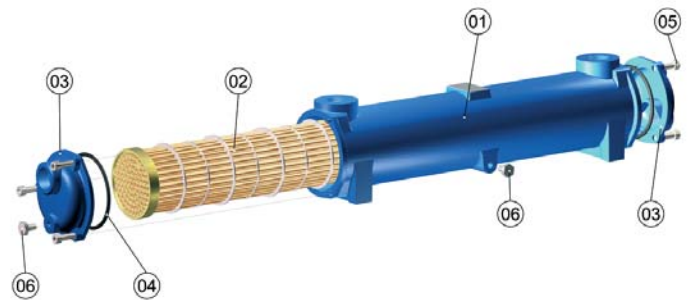
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



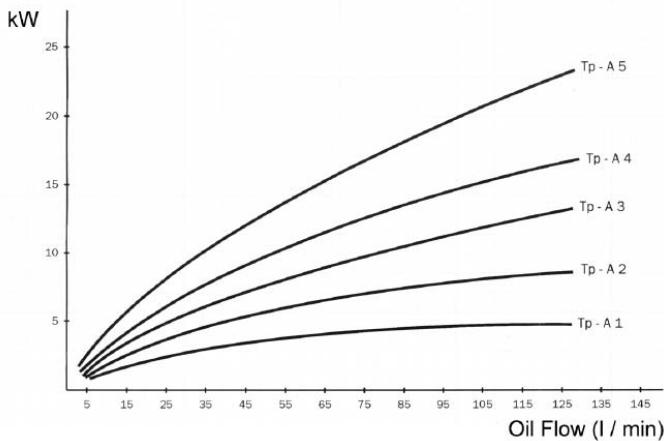
### Parts and Materials

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-A1M	3	30	15	0,10	0,02	0,13
TP-A2M	6	46	23	0,19	0,05	0,22
TP-A3M	9	56	28	0,36	0,09	0,32
TP-A4M	13	64	32	0,60	0,13	0,46
TP-A5M	16	56	28	0,56	0,12	0,68

Maximal Fresh Water Flow Rate Capacity: 50 l/min (35 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).

## Hydraulic Oil Coolers - Series BM

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)

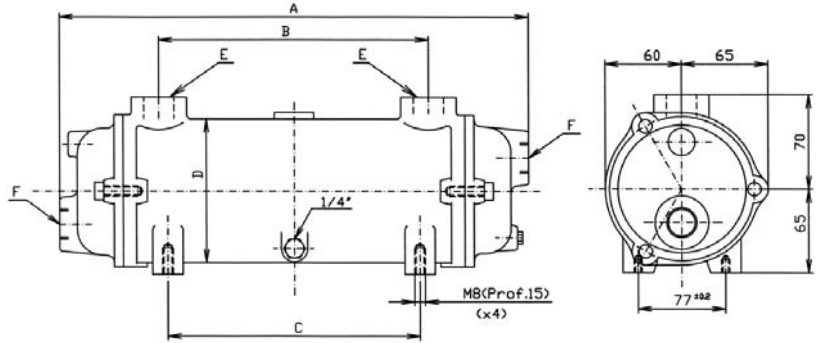
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



### Dimensions

Model	A	B	C	D	E-F	Weight
TP-B1M	273	123	109	Ø108	1"	5
TP-B2M	355	205	191	Ø108	1"	6
TP-B3M	452	302	289	Ø108	1"	7
TP-B4M	587	437	425	Ø108	1"	8,2
TP-B5M	730	580	566	Ø108	1"	10

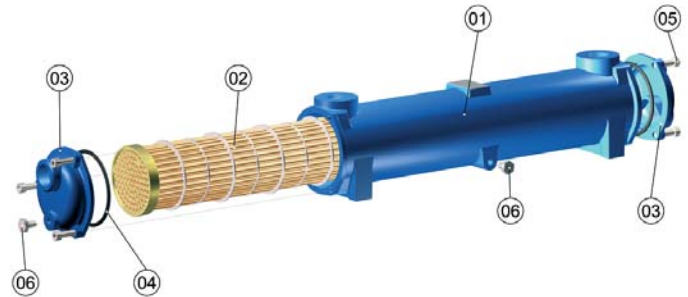
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



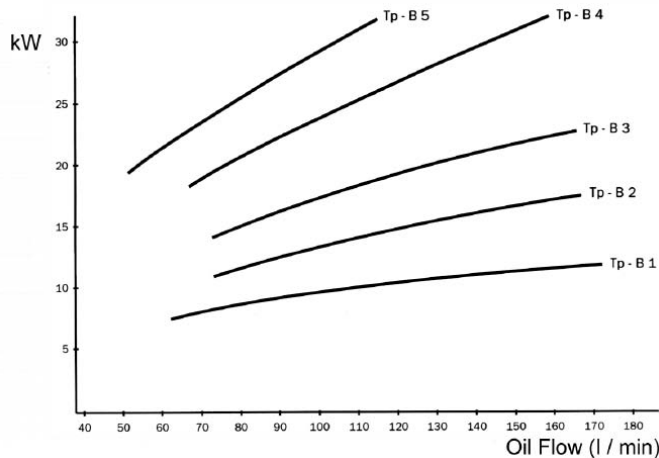
### Parts and Materials

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-B1M	8	66	33	0,16	0,02	0,33
TP-B2M	12	80	40	0,32	0,03	0,48
TP-B3M	18	104	52	0,96	0,07	0,66
TP-B4M	25	106	53	1	0,11	0,90
TP-B5M	29	98	49	1,04	0,14	1,16

Maximal Fresh Water Flow Rate Capacity: 80 l/min (50 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).

**Hydraulic Oil Coolers - Series CM**

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)

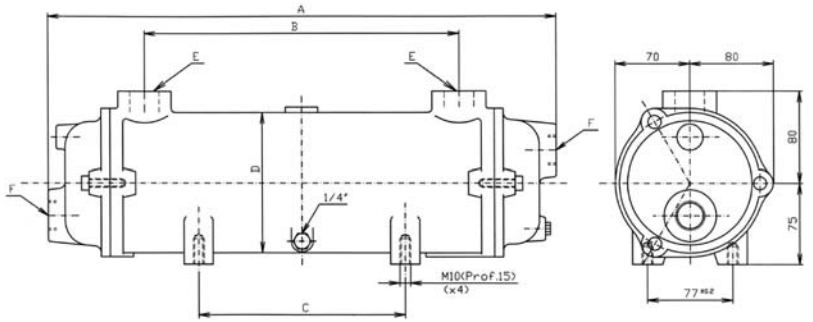
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



**Dimensions**

Model	A	B	C	D	E-F	Weight
TP-C1M	372	182	93	Ø130	1"1/4	9
TP-C2M	472	287	193	Ø130	1"1/4	10
TP-C3M	600	415	320	Ø130	1"1/4	12,5
TP-C4M	744	557	465	Ø130	1"1/4	14,5
TP-C5M	922	737	643	Ø130	1"1/4	17,5

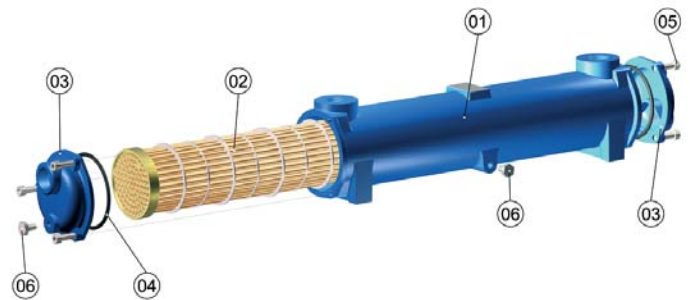
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



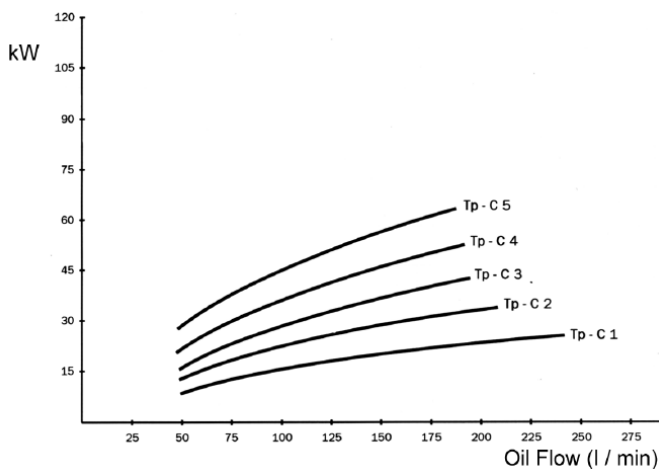
**Parts and Materials**

Part	Name	Material
1	Shell	Aluminium /Bronze/Cast Iron
2	Tube Stack	
2.1	Tubes	Copper-Nickel / St. Steel / Cooper
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-C1M	16	100	50	0,28	0,04	0,64
TP-C2M	26	120	60	0,55	0,07	0,90
TP-C3M	36	140	70	0,74	0,13	1,23
TP-C4M	48	160	80	1,06	0,17	1,60
TP-C5M	56	140	70	0,95	0,16	2,07

Maximal Fresh Water Flow Rate Capacity: 140 l/min (90 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).

**Hydraulic Oil Coolers - Series DM**

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)

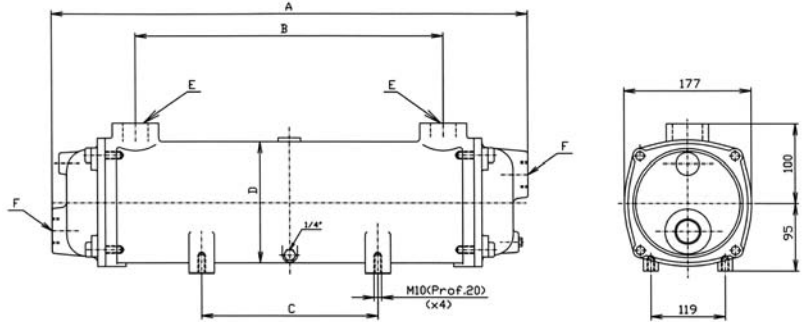
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



**Dimensions**

Model	A	B	C	D	E-F	Weight
TP-D1	505	270	109	Ø162	1"1/2	20
TP-D2	634	402	238	Ø162	1"1/2	24
TP-D3	780	546	384	Ø162	1"1/2	27
TP-D4	954	722	558	Ø162	1"1/2	32
TP-D5	1.160	928	764	Ø162	1"1/2	38
TP-D6	1.364	1.132	968	Ø162	1"1/2	45

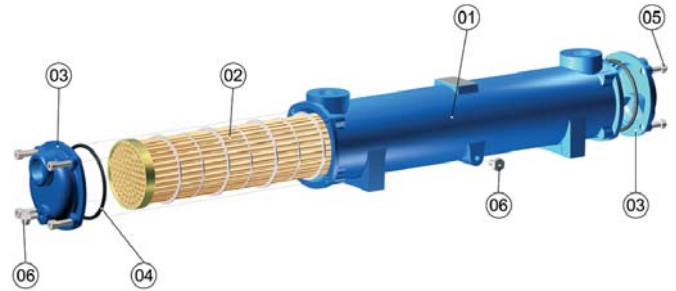
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



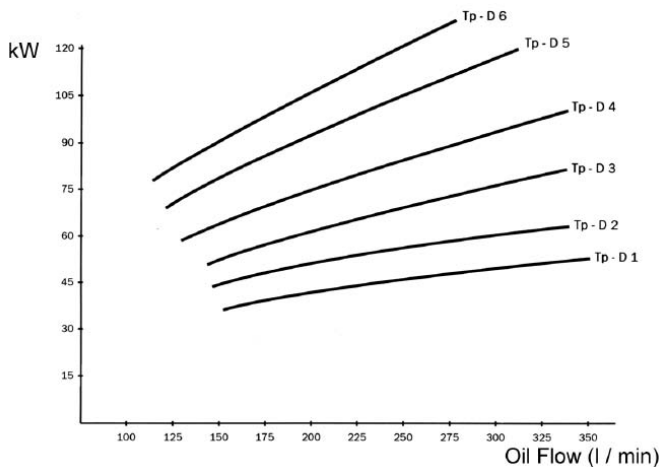
**Parts and Materials**

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-D1M	40	180	90	0,40	0,07	1,58
TP-D2M	52	200	100	0,55	0,09	2,14
TP-D3M	66	220	110	0,62	0,12	2,79
TP-D4M	84	240	120	0,80	0,16	3,57
TP-D5M	108	260	130	1	0,19	4,48
TP-D6M	120	240	120	0,96	0,21	5,38

Maximal Fresh Water Flow Rate Capacity: 190 l/min (110 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).

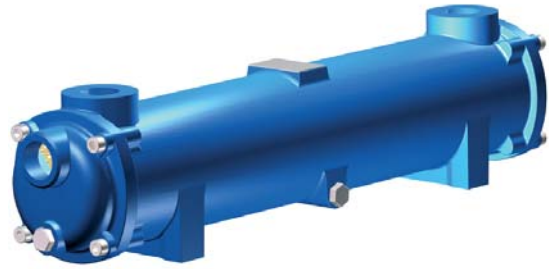
**Hydraulic Oil Coolers - Series EM**

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)

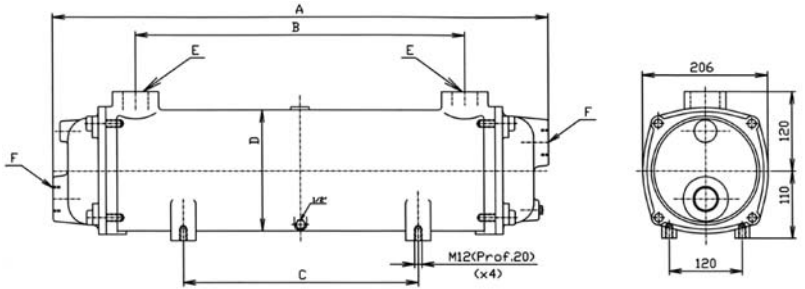
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



**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

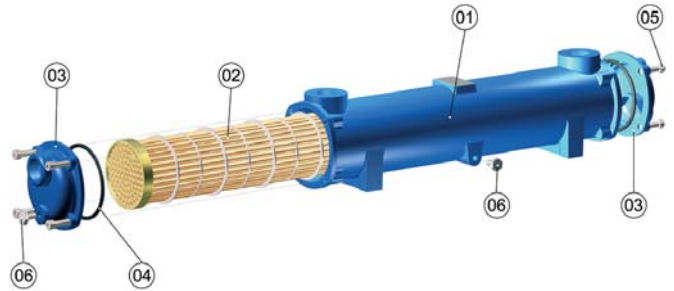
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



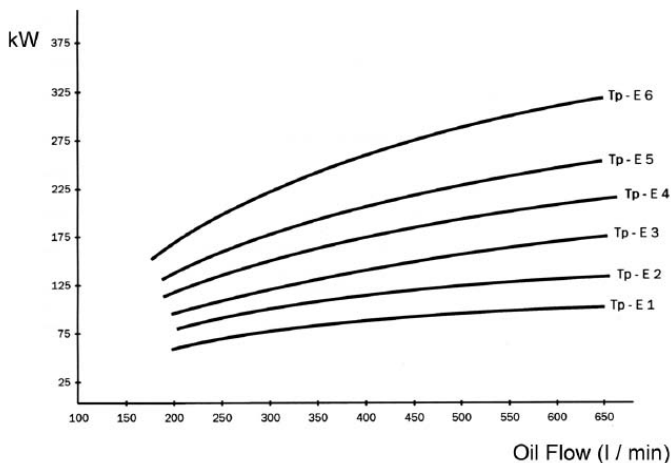
**Parts and Materials**

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).

**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)

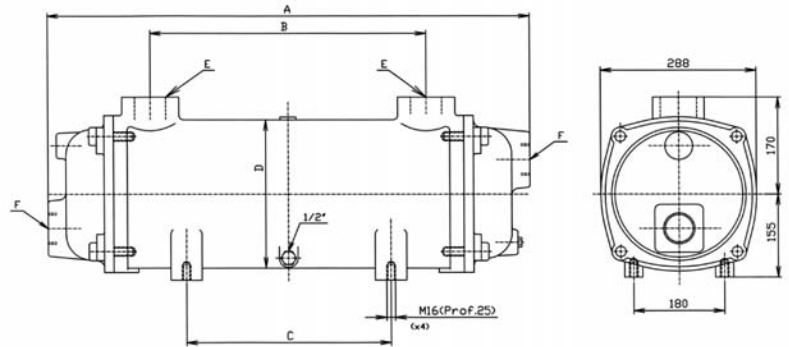
\* Testing Standard: BS6755 Stability Test performed at 20 bar, Sealing Leakage Test at 14 bar.



**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

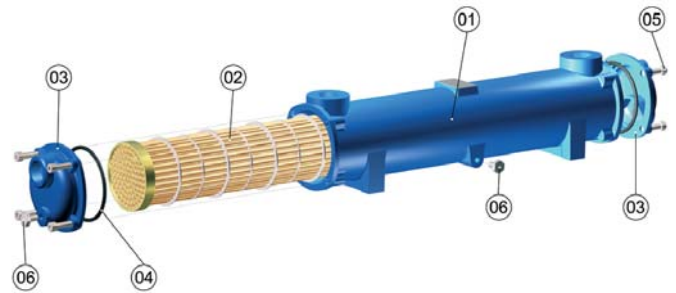
Length Units expressed in mm, Diametres in Inches / Weight in Kgs  
General Arrangement Drawings pdf or Auto-Cad formats are available on request.



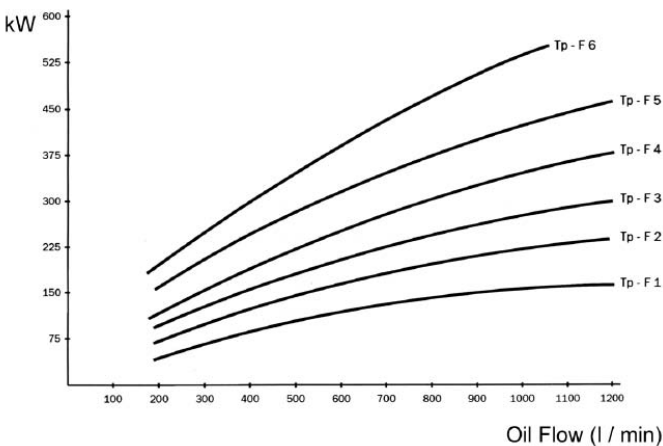
**Parts and Materials**

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).