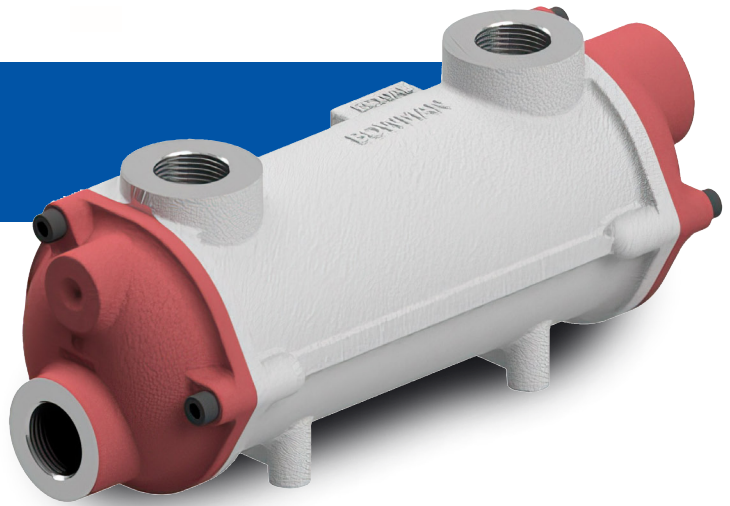


PRODUCT PROFILE

EC Series

Hydraulic Oil Coolers



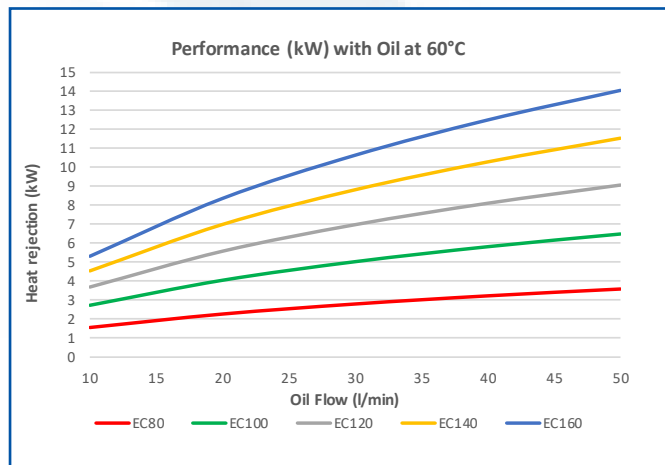
Introduction

Bowman hydraulic oil coolers offer efficient, reliable heat transfer performance for a wide range of cooling requirements. Suitable for cooling a variety of oils, using either fresh or sea water, they have become the unit of choice for hydraulic engineers the world over.

Typical Performance

Bowman EC oil coolers can remove from around 2kW up to 24kW of heat and the tables and graphs below show examples of their cooling performance throughout the range, using different water flow rates and oil temperatures.

ISO 46 Oil at 60°C on inlet to the cooler
Water inlet temperature: 30°C at 40 l/min

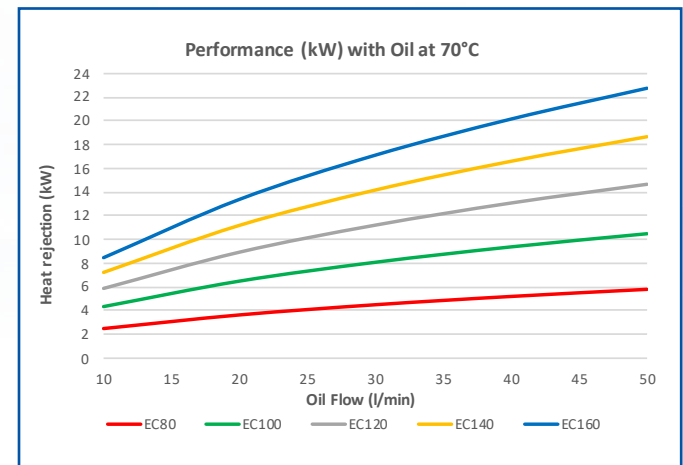


Heat Dissipation (kW) vs Oil Flow Rate (l/min)					
Model	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min
EC80	1.6	2.3	2.8	3.2	3.6
EC100	2.7	4.1	5.0	5.8	6.5
EC120	3.7	5.6	7.0	8.1	9.1
EC140	4.5	7.0	8.8	10.3	11.5
EC160	5.3	8.4	10.6	12.5	14.1

Oil Outlet Temp (°C) vs Oil Flow Rate (l/min)					
Model	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min
EC80	54.6	56.1	56.8	57.2	57.5
EC100	50.5	53.0	54.2	55.0	55.5
EC120	47.1	50.3	51.9	53.0	53.7
EC140	44.1	47.8	49.8	51.0	52.0
EC160	41.3	45.4	47.6	49.1	50.2

The figures show typical heat transfer performance and any changes in temperature, flow rate or fluids will significantly alter their performance, so whilst this information is provided for guidance, specific application details should be sent to Bowman, or an authorised distributor, to ensure the correct unit is specified.

ISO 46 Oil at 70°C on inlet to the cooler
Water inlet temperature: 25°C at 50 l/min



Heat Dissipation (kW) vs Oil Flow Rate (l/min)					
Model	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min
EC80	2.5	3.7	4.5	5.2	5.8
EC100	4.4	6.5	8.1	9.4	10.5
EC120	5.9	8.9	11.2	13.1	14.7
EC140	7.2	11.2	14.2	16.6	18.7
EC160	8.5	13.4	17.1	20.2	22.8

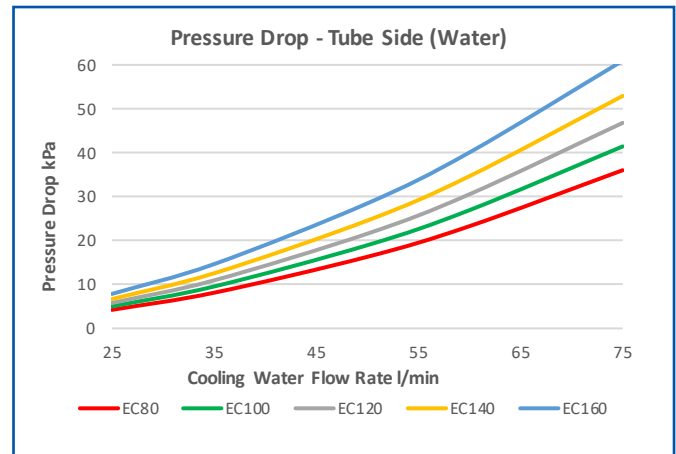
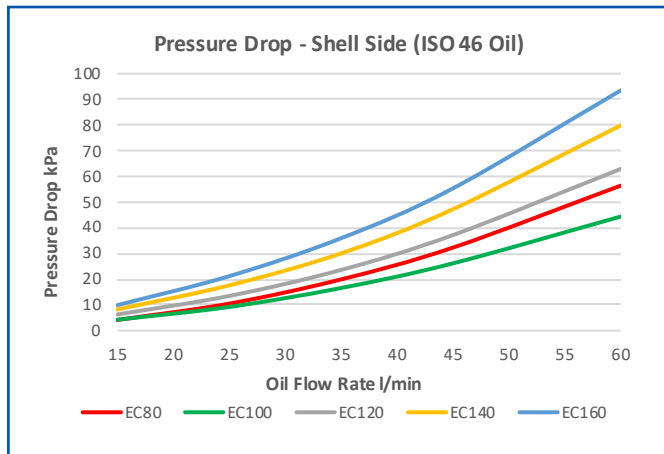
Oil Outlet Temp (°C) vs Oil Flow Rate (l/min)					
Model	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min
EC80	61.4	63.7	64.8	65.5	66.0
EC100	54.9	58.8	60.7	61.9	62.8
EC120	49.5	54.5	57.1	58.7	59.9
EC140	44.7	50.5	53.6	55.6	57.1
EC160	40.3	46.6	50.2	52.5	54.2

Computer Selection Programme

Given specific details including oil type and flow rate, temperatures of oil and water and heat dissipation required we can use computer aided selection software to accurately select the ideal unit for your application. Please contact our technical sales team or your local Bowman distributor for assistance.

Pressure Drop

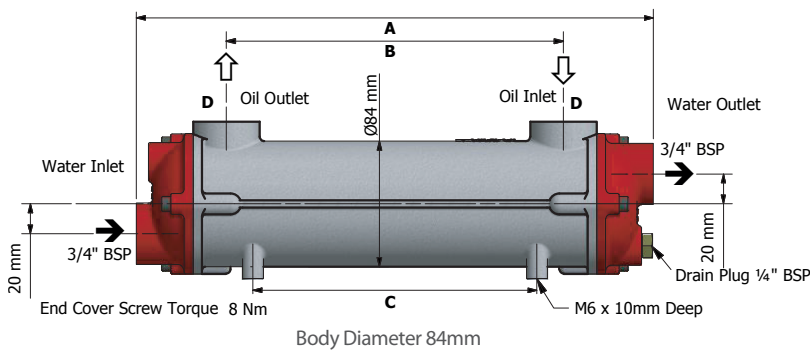
The graphs show the typical pressure drop that is expected when using a normal flow, three pass, EC series oil cooler. Where flow rates or pressure drops are too high, we may be able to offer alternative configurations such as high flow, single pass or two pass models which can accept higher flow rates with reduced pressure drop. Alternatively, a different size cooler can be selected. If detailed pressure drop information for specific flows, fluids or temperatures is required, please contact a distributor or our technical sales team.



Pressure Drop (kPa) - Shell Side (ISO 46 Oil)					
Model	15 l/min	25 l/min	35 l/min	45 l/min	60 l/min
EC80	4.2	10.5	19.9	32.3	56.4
EC100	4.2	9.2	16.6	26.2	44.4
EC120	6.3	13.5	23.6	37.2	62.9
EC140	8.3	17.6	30.1	47.2	79.8
EC160	9.9	21.2	36.0	55.4	93.5

Pressure Drop (kPa) - Tube Side (Water)					
Model	25 l/min	35 l/min	50 l/min	60 l/min	75 l/min
EC80	4.2	8.1	16.3	23.3	36.0
EC100	5.0	9.6	19.0	26.9	41.4
EC120	5.8	11.0	21.6	30.6	46.8
EC140	6.7	12.6	24.6	34.7	52.9
EC160	7.9	14.7	28.5	40.1	60.9

Specification / Materials



	Standard	Marine	Other options
Tube	90/10 Cupro Nickel	90/10 Cupro Nickel	Copper, 70/30 Cupro Nickel, Titanium
Shell	Aluminium	Aluminium	Cast Iron (some models)
End Covers	Cast Iron	Composite or Brass / Bronze	2 pass and single pass in cast iron and brass / bronze
Seals	Nitrile	Nitrile	Viton, EPDM

Model	Max Flow	Number of Tubes	Surface Area (m ²)	Volume (litres)	Weight	A	B	C	D	D*
	Shell side			Shell	Tube	kg	mm	mm	mm	BSP
EC80	80	61	0.11	0.26	0.31	2.4	174	60	60	1/2"
EC100	92	61	0.21	0.49	0.44	3.2	260	140	104	3/4"
EC120	77	61	0.31	0.74	0.57	3.8	346	226	190	3/4"
EC140	68	61	0.42	0.97	0.71	4.8	444	324	288	3/4"
EC160	64	61	0.57	1.3	0.91	5.7	572	452	416	3/4"

Please note: Dimensions marked D* are for high flow versions only. EC80 models are not available in high flow versions.

Flow rates – Tube Side

Flow rate is important to the performance of the oil cooler but it is also crucial that minimum and maximum flow rates are adhered to in order to ensure longevity of the unit in service. Please refer to the following table for minimum and maximum flow rates.

Model	Minimum Flow Rate (l/min) Based on 1m/s Velocity			Maximum Flow Rate (l/min) Sea Water - Based on 2m/s Velocity			Maximum Flow Rate (l/min) Fresh Water - Based on 3m/s Velocity		
	1 Pass	2 Pass	3 Pass	1 Pass	2 Pass	3 Pass	1 Pass	2 Pass	3 Pass
EC Series	85	40	25	170	80	50	255	120	75

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