

PRODUCT PROFILE

GL Series

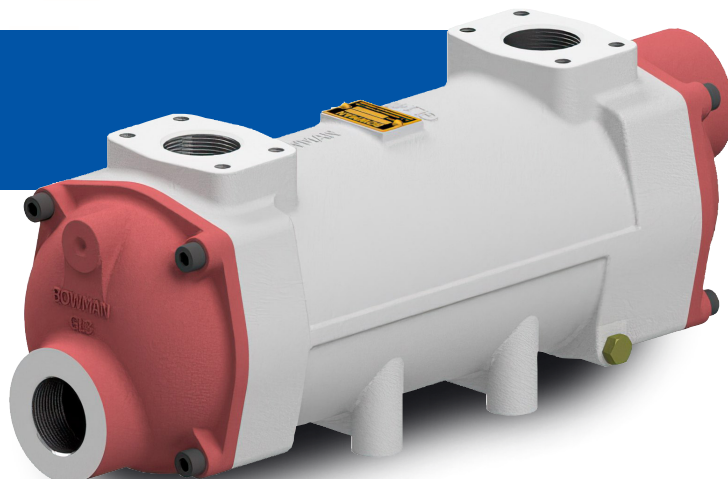
Hydraulic Oil Coolers

Introduction

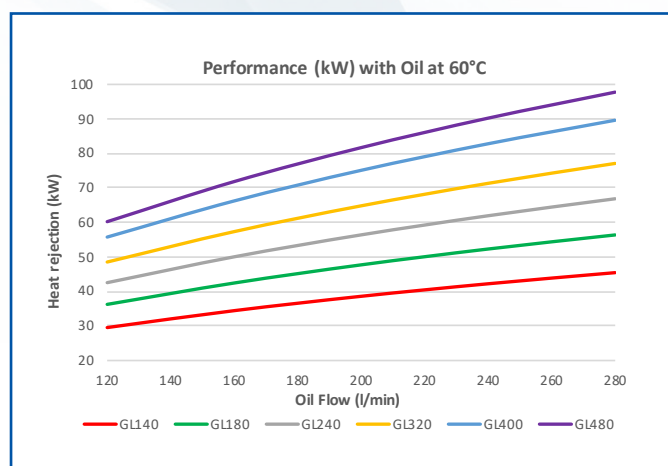
Bowman hydraulic oil coolers offer efficient, reliable heat transfer performance for a wide range of cooling requirements. Suitable for cooling a variety of oils, using either fresh or sea water, they have become the unit of choice for hydraulic engineers the world over.

Typical Performance

Bowman GL oil coolers can remove from around 30kW up to 162kW 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 150 l/min

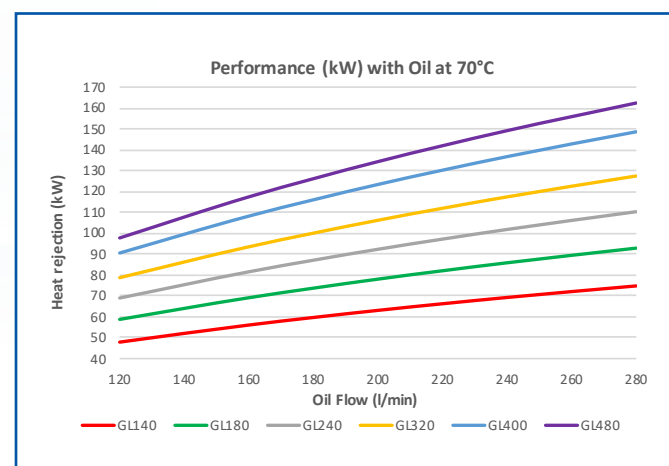


Heat Dissipation (kW) vs Oil Flow Rate (l/min)						
Model	120 l/min	160 l/min	200 l/min	240 l/min	280 l/min	
GL140	29.6	34.5	38.6	42.2	45.5	
GL180	36.3	42.5	47.7	52.3	56.4	
GL240	42.6	50.1	56.4	62.0	66.9	
GL320	48.5	57.4	64.8	71.3	77.1	
GL400	55.8	66.2	75.1	82.8	89.6	
GL480	60.2	71.9	81.7	90.2	97.8	

Oil Outlet Temp (°C) vs Oil Flow Rate (l/min)						
Model	120 l/min	160 l/min	200 l/min	240 l/min	280 l/min	
GL140	51.4	52.5	53.3	53.9	54.4	
GL180	49.5	50.8	51.7	52.4	53.0	
GL240	47.6	49.1	50.2	51.0	51.7	
GL320	45.9	47.5	48.7	49.6	50.4	
GL400	43.7	45.5	46.9	48.0	48.8	
GL480	42.4	44.3	45.7	46.9	47.8	

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 200 l/min



Heat Dissipation (kW) vs Oil Flow Rate (l/min)						
Model	120 l/min	160 l/min	200 l/min	240 l/min	280 l/min	
GL140	47.9	56.1	63.1	69.3	74.8	
GL180	58.8	69.1	78.0	85.9	92.9	
GL240	69.0	81.6	92.3	101.8	110.3	
GL320	78.7	93.5	106.2	117.4	127.4	
GL400	90.6	108.2	123.4	136.7	148.6	
GL480	97.8	117.4	134.3	149.2	162.4	

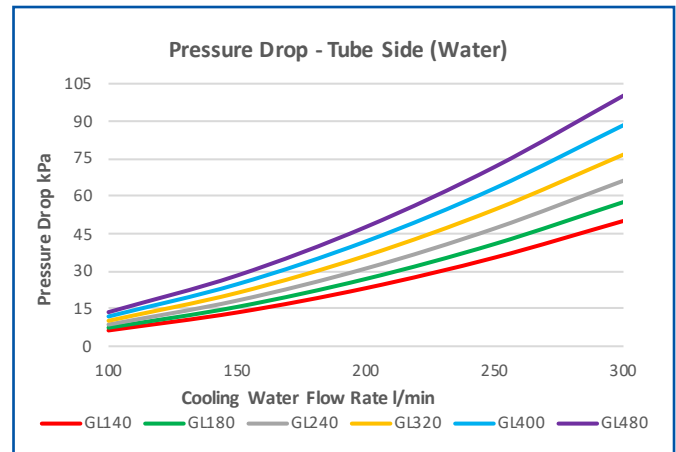
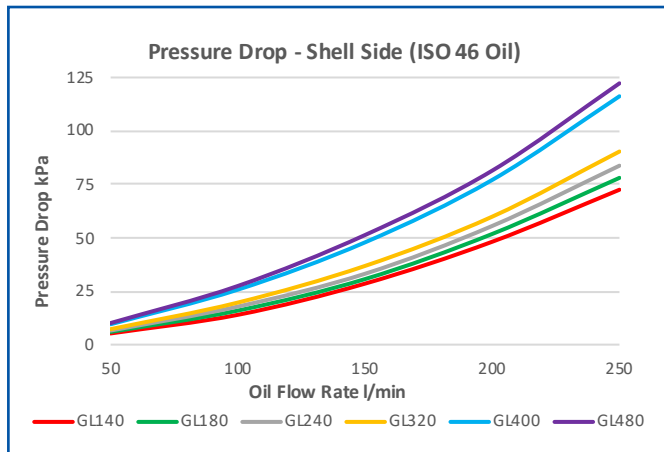
Oil Outlet Temp (°C) vs Oil Flow Rate (l/min)						
Model	120 l/min	160 l/min	200 l/min	240 l/min	280 l/min	
GL140	56.2	57.9	59.1	60.1	60.8	
GL180	53.0	55.0	56.5	57.6	58.6	
GL240	50.0	52.3	54.0	55.3	56.4	
GL320	47.1	49.7	51.6	53.0	54.2	
GL400	43.6	46.4	48.5	50.2	51.6	
GL480	41.4	44.3	46.6	48.4	49.8	

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

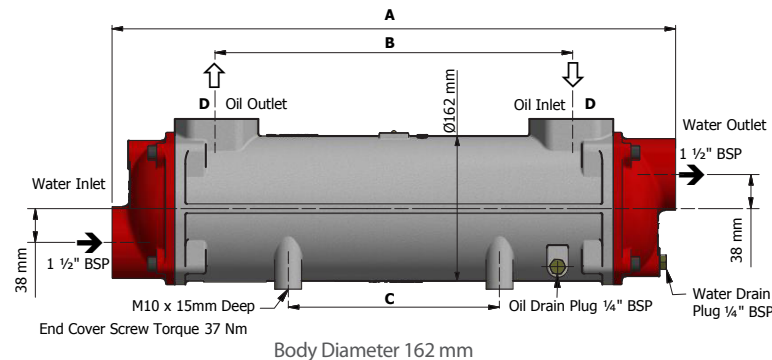
The graphs show the typical pressure drop that is expected when using a normal flow, three pass, GL series oil cooler. Where flow rates or pressure drops are too high, we may be able to offer alternative configurations such as high flow, single pass or two pass models which can accept higher flow rates 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	50 l/min	100 l/min	150 l/min	200 l/min	250 l/min
GL140	5.3	14.0	28.6	48.2	72.5
GL180	6.0	16.0	30.7	51.8	78.0
GL240	6.6	17.8	33.2	55.6	83.7
GL320	7.3	19.7	36.9	59.9	90.4
GL400	9.6	25.8	47.9	77.1	116.2
GL480	10.2	27.5	51.3	81.5	122.3

Pressure Drop (kPa) - Tube Side (Water)					
Model	150 l/min	225 l/min	115 l/min	145 l/min	175 l/min
GL140	6.4	13.6	23.3	35.5	50.1
GL180	7.5	15.8	27.0	40.9	57.7
GL240	8.7	18.3	31.1	47.1	66.2
GL320	10.2	21.4	36.2	54.7	76.7
GL400	12.0	24.9	42.0	63.2	88.4
GL480	13.7	28.4	47.8	71.8	100.2

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 (kg)	A (mm)	B (mm)	C (mm)	D (BSP)	D* (BSP)
	Shell side			Shell	Tube						
GL140	300	217	1.55	3.6	3.1	18	502	272	108	1 1/2"	Ø 51mm
GL180	285	217	2.1	4.8	3.8	21	630	400	236	1 1/2"	Ø 51mm
GL240	280	217	2.72	6.3	4.6	25	776	546	382	1 1/2"	Ø 51mm
GL320	270	217	3.48	8	5.5	30	954	724	560	1 1/2"	Ø 51mm
GL400	240	217	4.35	10	6.6	36	1156	926	762	1 1/2"	Ø 51mm
GL480	235	217	5.22	12.2	7.7	42	1360	1130	966	1 1/2"	Ø 51mm

Please note: Dimensions marked D* are for high flow versions only.

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
GL Series	280	145	100	560	290	200	900	470	320

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