WATER COOLED K

COPPER & STEEL CONSTRUCTION

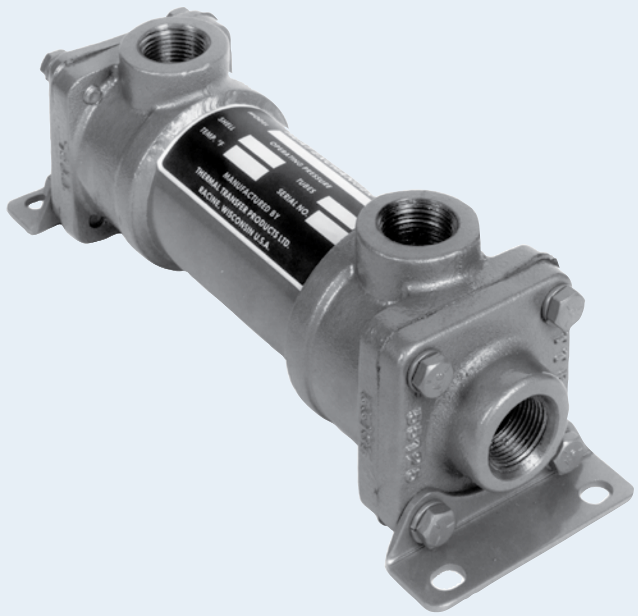
Features

- Modine Interchange
- Finned Tube Bundle
- 3/16" Tube Size
- Use EK for New Application
- Cast Iron Hubs
- Steel Shell

OPTIONS

SAE Internal "O" Ring Ports

Shell Side



Ratings

Pressure Ratings (psi) K-500 & K-700 Series

Operating	Test
500	550 Shells
150	225 Tubes

Pressure Ratings (psi) K-1000 Series

Operating	Test
400	450 Shells
150	225 Tubes

Operating Temperature 350° F

Materials

Shell Steel

Tubes Copper

Baffles Steel

Mounting Brackets Steel

Gaskets Non Asbestos Nitrile Rubber/ Cellulose Fiber

Nameplate Aluminum Foil

Fins Aluminum

End Hubs Cast Malleable Iron

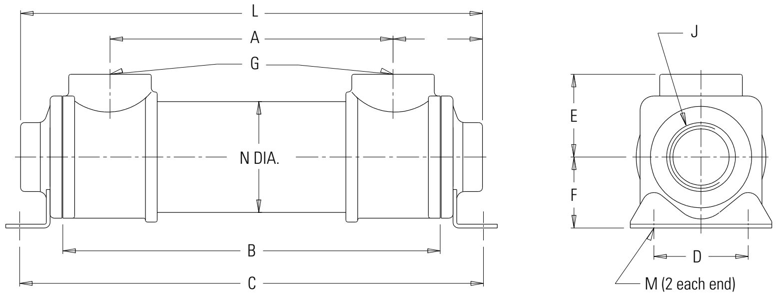
End Bonnets Cast Iron

Headers Cast Malleable Iron

Dimensions

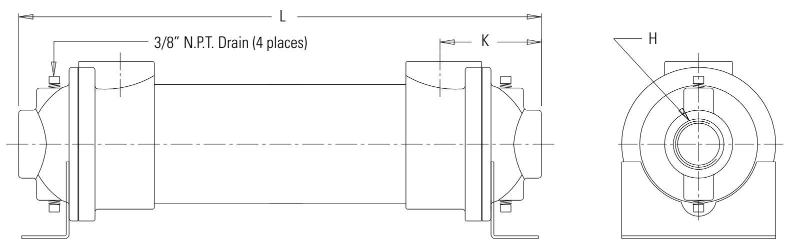
One Pass

K-500 & K-700 Series



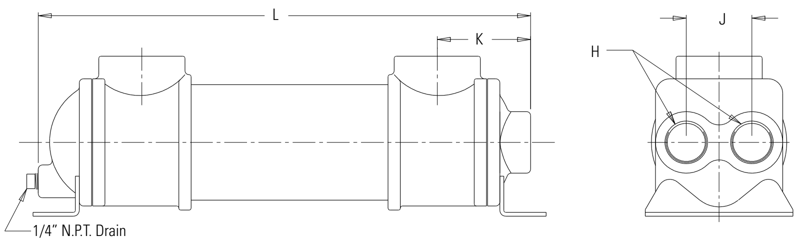
Model	L	H NPT	K
K-508-0	10.19	.75	2.22
K-512-0	14.19		
K-514-0	20.19		
K-708-0	10.69	1.25	2.84
K-712-0	14.69		
K-714-0	16.69		
K-718-0	20.69		
K-1012-0	17.12	2.00	4.31
K-1014-0	19.12		
K-1018-0	23.13		
K-1024-0	29.12		

K-1000 Series



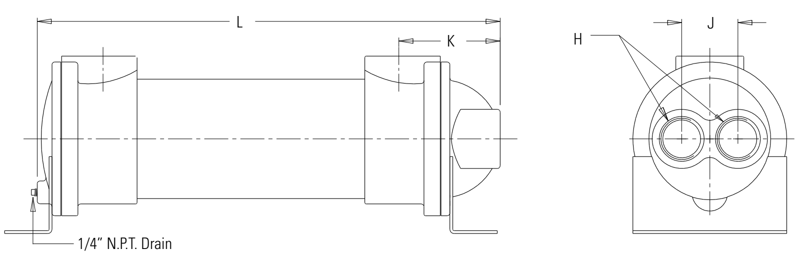
Two Pass

K-700 Series



Model	L	H NPT	J	K
K-708-T	10.69	1.00	2.00	2.84
K-712-T	14.69			
K-714-T	16.69			
K-718-T	20.69			
K-1012-T	15.62	1.50	2.38	4.31
K-1014-T	17.62			
K-1018-T	21.62			
K-1024-T	27.62			

K-1000 Series



Model	A	B	C	D	E	F	G N.PT.	M	N DIA.	WEIGHT (LBS)	G SAE (OPTIONAL)
K-508	5.75	8.00	10.25	2.50	1.88	1.62	.75	.34 X .50	2.50	7.75	#12 1-1/16 - 12 UN-2B
K-512	9.75	12.00	14.25							8.76	
K-514	11.75	14.00	16.25							9.12	
K-518	15.75	18.00	20.25							10.00	
K-708	5.00	8.00	10.75	3.00	2.62	2.25	1.50	.44 x .75	3.50	15.75	#24 1-7/8 - 12 UN-2B
K-712	9.00	12.00	14.75							18.40	
K-714	11.00	14.00	16.75							19.75	
K-718	15.00	18.00	20.75							21.50	
K-1012	8.50	12.00	15.50	4.00	3.50	4.00	2.00	.44 x 1.00	5.00	42.50	#32 2-1/2 -12 UN-2B
K-1014	10.50	14.00	17.50							44.25	
K-1018	14.50	18.00	21.50							49.00	
K-1024	20.50	24.00	27.50							57.00	

Note: We reserve the right to make reasonable design changes without notice. Dimensions are in inches.

Performance Curves are based on 100SSU oil leaving the cooler 40°F higher than the incoming water temperature (40°F approach temperature).

Step 1 **Determine the Heat Load.** This will vary with different systems, but typically coolers are sized to remove 25 to 50% of the input nameplate horsepower. (Example: 100 HP Power Unit x .33 = 33 HP Heat load.)
If BTU/Hr. is known: $HP = \frac{BTU/Hr}{2545}$

Step 2 **Determine Approach Temperature.**
Desired oil leaving cooler °F – Water Inlet temp. °F = Actual Approach

Step 3 **Determine Curve Horsepower Heat Load.** Enter the information from above:
HP heat load x $\frac{40}{\text{Actual Approach}}$ x Viscosity Correction A = Curve Horsepower

Step 4 **Enter curves** at oil flow through cooler and curve horsepower. Any curve above the intersecting point will work.

Step 5 **Determine Oil Pressure Drop from Curves.** Multiply pressure drop from curve by correction factor B found on oil viscosity correction curve.
● = 5 PSI; ■ = 10 PSI; ▲ = 20 PSI.

Oil Temperature

Oil coolers can be selected by using entering or leaving oil tempertures.

Typical operating temperature ranges are:

Hydraulic Motor Oil	110°F - 130°F
Hydrostatic Drive Oil	130°F - 180°F
Lube Oil Circuits	110°F - 130°F
Automatic Transmission Fluid	200°F - 300°F

Desired Reservoir Temperature

Return Line Cooling: Desired temperature is the oil temperature leaving the cooler. This will be the same temperature that will be found in the reservoir.

Off-Line Recirculation Cooling Loop: Desired temperature is the temperature entering the cooler. In this case, the oil temperature change must be determined so that the actual oil leaving temperature can be found. Calculate the oil temperature change (Oil △T) with this formula:

Oil △T=(BTU's/Hr.)/GPM Oil Flow x 210).

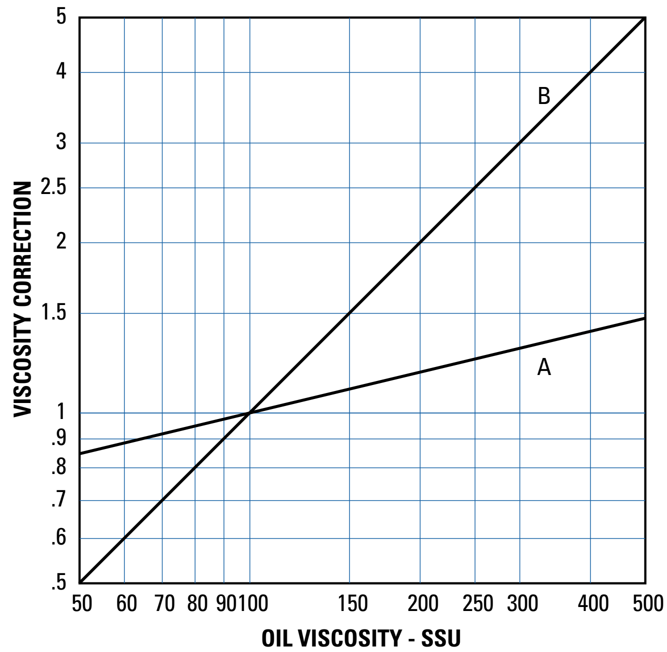
To calculate the oil leaving temperature from the cooler, use this formula:

Oil Leaving Temperature = Oil Entering Temperature - Oil △T.

This formula may also be used in any application where the only temperature available is the entering oil temperature.

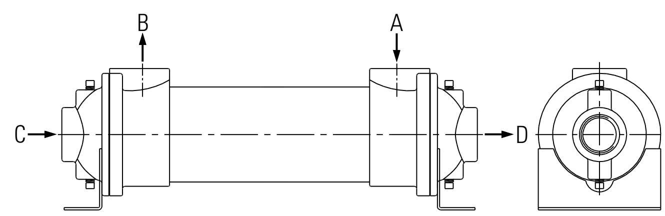
Oil Pressure Drop: Most systems can tolerate a pressure drop through the heat exchanger of 20 to 30 PSI. Excessive pressure drop should be avoided. Care should be taken to limit pressure drop to 5 PSI or less for case drain applications where high back pressure may damage the pump shaft seals.

OIL VISCOSITY CORRECTION MULTIPLIERS

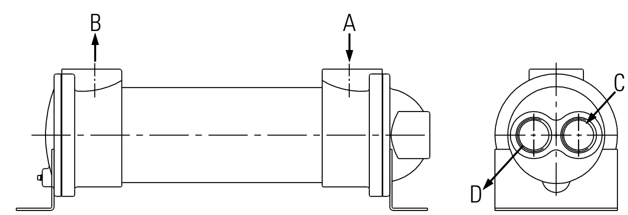


Piping Diagrams

Single Pass Model



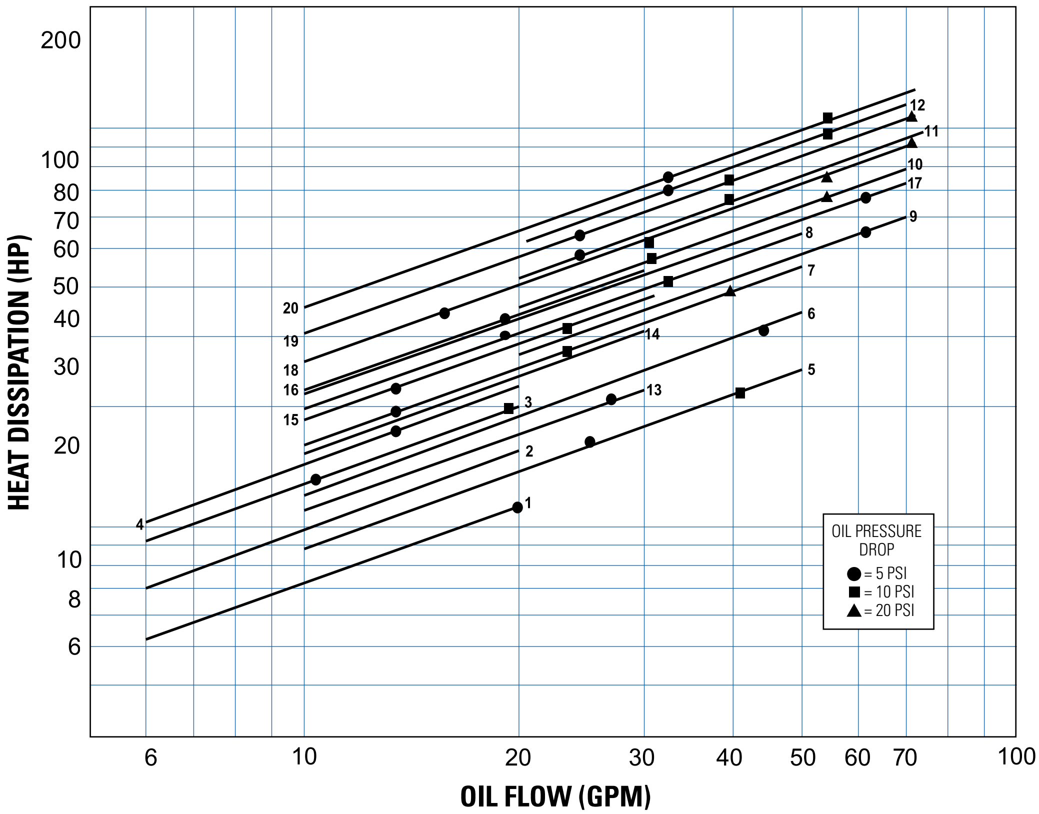
Two Pass Model



A = Hot fluid to be cooled
B = Cooled fluid
C = Cooling water in
D = Cooling water out

Performance Curves

2 to 1 Oil to Water Ratio



Model Code
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9. K-1012-0
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11. K-1018-0
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15. K-714-T
16. K-718-T
17. K-1012-T
18. K-1014-T
19. K-1018-T
20. K-1024-T

Maximum Flow Rates

Unit Size	Shell Side (GPM)	Tube Side (GPM) 0	T
500	20	13	—
700	70	24	12
1000	100	56	28

4 to 1 Oil to Water Ratio