

BASIC INFORMATION REQUIRED

A. ESTABLISH AMBIENT AIR TEMPERATURE. This is the maximum air temperature in which the cooler will be operating. It may vary depending upon what locality the appliance is being called upon to operate in.

B. DETERMINE THE INLET OIL TEMPERATURE. This is usually equal to the maximum temperature considered to be acceptable for the oil circuit.

C. DETERMINE WHAT AIR FACE VELOCITY IS AVAILABLE. AFV. In many mobile applications the cooler will be placed in front of existing engine water radiator. Ensure that the increased static pressure required to draw air through the oil cooler will not reduce the effectiveness of the engine radiator. The performance graphs are based on a AFV of 5.55 Meters per second which is equal to a vehicle road speed of 20 kph. Table 6 provides static pressures in Pa for the cooler cores.

D. ESTABLISH THE HEAT LOAD TO BE REMOVED IN KILOWATTS. Heat load in the graphs in tables 1 and 2 is expressed in Kilowatts per degree C at 30°C ETD. Heat load can be considered to be equal to the inefficiency of the system as a percentage of the power input, less the thermal dissipating capacity of the system.

STEPS IN MAKING A COOLER SELECTION

1. Calculate the ETD by subtracting the A Ambient air temperature from B the inlet oil temperature. The heat load performance graphs are based in a ETD of 30°C . If your ETD is other than 30°C make a correction for ETD as follows.

$$HL \text{ from "D"} \times \left(\frac{30}{\text{ETD as calculated in 1}} \right) = \text{Corrected HL 1}$$

2. If available air face velocity is different than 5.55 m/s upon which the graphs are based, a further correction should be made for AFV "C". Refer to Table 3. Read off the correction factor for the AFV you intend to apply to the cooler and correct as follows.

$$\frac{\text{Corrected HL 1}}{\text{AFV Correction Factor (Table 3)}} = \text{Corrected HL 2}$$

3. With Corrected HL 2 enter Table 1 or Table 2 and select the cooler type equal to or greater than your application by following the appropriate lines equal to your oil flow in litres per minute and your Corrected HL 2. The number at right hand side of each curve indicates the cooler ID for the cooler type which can be read from the dimensional information on facing page. For larger coolers contact our Sales Department.

4. The Delta P (pressure drop) for the selected cooler at various oil flow rates can be established by referring to the Pressure drop symbols on each curve as explained in Table 4. These symbols are indicative of pressure drop with oil at 30 cSt viscosity. Corrections for other viscosities are shown on right hand side of the graph in table 5. To correct, multiply the pressure drop established from the graph symbols by the correction factor from Table 5.

5. Most of our Mobile Oil Coolers are available with optional full flow built in bypass valves set to 2 BAR or 4 BAR. Under most circumstances these units may be used as constant bypass valves. Constant bypass arrangement permits higher than rated flow to pass the cooler core under cold start up conditions while allowing maximum flow through the core when the oil reaches a temperature where a high level of cooling is required.

Operating pressure-21 Bar (300 PSI).
Min burst pressure-62 Bar (900 PSI),
Max Operating Temperature 180°C

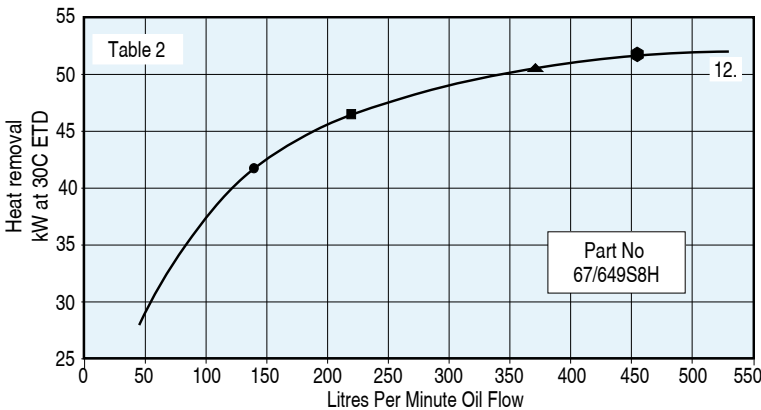
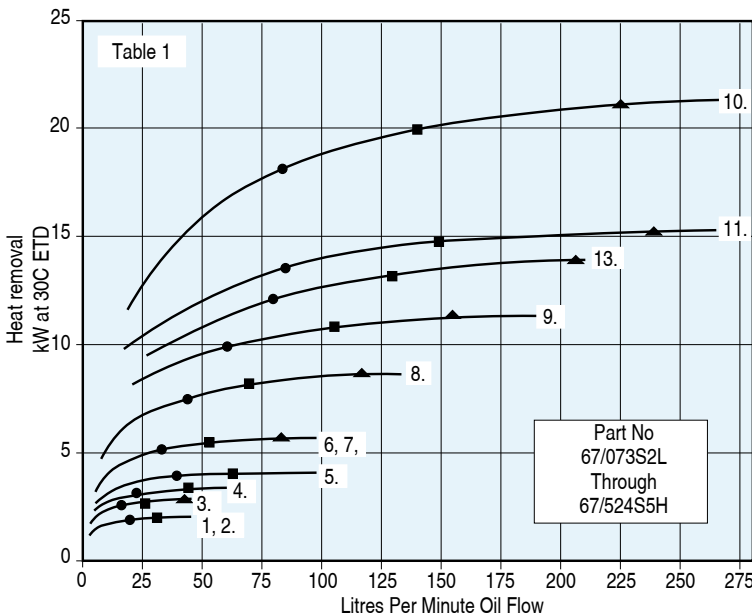


Table 4: Pressure Drop Symbols
Pressure Drop BAR @ 30cSt
ISO 68 Oil at 58c (136f)
x 14.5 for PSI

0.73 BAR	1.46 BAR	2.90 BAR	4.35 BAR
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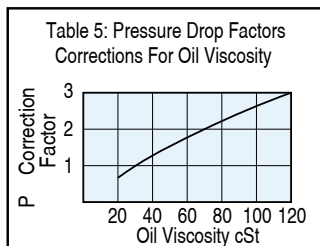


Table 3: Heat Transfer
Correction Factors
for Air Face Velocity
In Metres Per Second

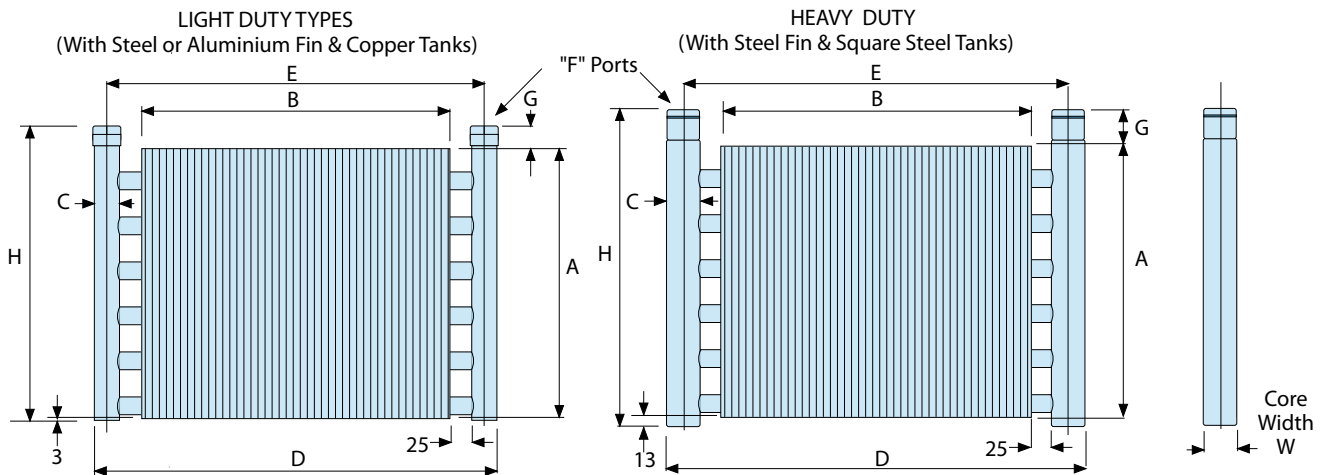
2.00	=	0.640
2.55	=	0.710
3.00	=	0.770
3.50	=	0.800
4.00	=	0.850
5.55	=	1.000
7.50	=	1.149
10.00	=	1.224
12.50	=	1.337

Table 6: Air Static
Pressure Drop For Air
Face Velocity In Pa

Air Flow m/s	1 Row Core	2 Row Core
2.00	25	52
2.55	36	73
3.00	43	94
3.50	55	118
4.00	65	144
5.55	105	212
7.50	174	473
10.00	274	652
12.50	473	747

in. H₂O = Pa x 0.004

COOLING ELEMENTS



DIMENSIONS - LIGHT DUTY WITH STEEL FINNS, COPPER TUBES & TANKS - BSPP PORTS

ID	Part No	Cooler Type	Wt kg	A	B	C	D	E	F*	G	H	Ø W
1	67/073S2L	DC10318S1	2.2	152--6"	362--14.25"	22.2--0.88"	457--18.00"	435--17.13"	1/2"	9.5--.38"	165--6.5"	38-1.5"
2	67/073S3L	DC10318R1	2.3	152--6"	362--14.25"	28.6--1.13"	470--18.50"	441--17.38"	3/4"	14.2--.56"	170--6.69"	38-1.5"
3	67/084S3L	DC10324R1	2.8	152--6"	514--20.25"	28.6--1.13"	622--24.50"	594--23.38"	3/4"	14.2--.56"	170--6.69"	38-1.5"
4	67/106S2L	DC10421S1	3.4	203--8"	438--17.25"	22.2--0.88"	533--21.00"	511--20.12"	1/2"	9.5--.38"	216--8.50"	38-1.5"
5	67/194S3L	DC10618S1	4.5	305--12"	349--13.75"	28.6--1.13"	457--18.00"	429--16.88"	3/4"	14.2--.56"	322--12.69"	38-1.5"

* All Ports Are BSPP Straight Female To ISO 228/1G. Use Parallel Face Fittings.

DIMENSIONS - LIGHT DUTY WITH ALUMINIUM FINNS, COPPER TUBES & TANKS - NPT PORTS

ID	Part No	Cooler Type	Wt kg	A	B	C	D	E	F*	G	H	Ø W
6	67/216A3L/N	DH10624R1	3.4	305--12"	502--19.75"	28.4--1.12"	610--24.00"	581--22.88"	3/4"	14.2--.56"	322--12.69"	38-1.5"
6	67/216A4L/N	DH10624R1	3.4	305--12"	502--19.75"	28.4--1.12"	610--24.00"	581--22.88"	1"	14.2--.56"	322--12.69"	38-1.5"
8	67/249A3L/N	DH10924S1	5.0	457--18"	502--19.75"	28.4--1.12"	610--24.00"	581--22.88"	3/4"	14.2--.56"	475--18.69"	38-1.5"
13	67/348A4L/N	DH11524S1	8.3	762--30"	489--19.25"	35--1.38"	610--24.00"	575--22.62"	1"	22.3--.88"	787--31.00"	38-1.5"

* All Ports Are NPT Female.

DIMENSIONS - HEAVY DUTY WITH STEEL FINNS, RHS STEEL TANKS & COPPER TUBES - BSPP PORTS

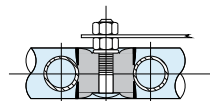
ID	Part No	Cooler Type	Wt kg	A	B	C	D	E	F*	G	H	□ W
5	67/194S3H	DC10618S1	7.0	305--12"	349--13.75"	38--1.50"	479--18.75"	439--17.25"	3/4"	40--1.57"	358--14.07"	38-1.5"
6	67/216S3H	DC10624S1	8.5	305--12"	502--19.75"	38--1.50"	629--24.75"	589--23.25"	3/4"	40--1.57"	358--14.07"	38-1.5"
7	67/216S4H	DC10624R1	8.5	305--12"	502--19.75"	38--1.50"	629--24.75"	589--23.25"	1"	40--1.57"	358--14.07"	38-1.5"
8	67/249S4H	DC10924R1	12.0	457--18"	502--19.75"	38--1.50"	629--24.75"	589--23.25"	1"	40--1.57"	510--20.07"	38-1.5"
9	67/326S5H	DC11224R1	15.0	610--24"	489--19.25"	38--1.50"	615--24.25"	577--22.75"	1 1/4"	45--1.75"	651--25.63"	38-1.5"
10	67/425S5H	DC11830S1	27.0	914--36"	628--24.75"	38--1.50"	756--29.75"	720--28.25"	1 1/4"	45--1.75"	970--38.25"	38-1.5"
11	67/524S5H	DC20924R1#	26.5	457--18"	502--19.75"	64--2.50"	680--26.75"	615--24.25"	1 1/4"	45--1.75"	534--21.00"	76-3.0"
12	67/649S8H	DC21842R1#	80.0	914--36"	883--34.75"	64--2.50"	1061--41.75"	997--39.25"	2"	58--2.28"	995--39.17"	76-3.0"

* All Ports Are BSPP Straight Female To ISO 228/1G. Use Parallel Face Fittings.

Indicates 2 row core

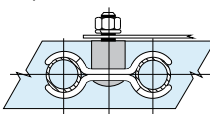
All dimensions shown are in mm

Bypass Valves are available on some models - refer to sales office for details.



Rubber Squeeze Block

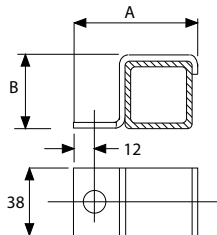
For use on Light Duty types. Fit between two tubes in gap between tank and fins. Kit includes mtg strap and 5/16" bolt. 4 required. **Kit No L-84741**



Saddle Bracket

For use on Light Duty or Heavy Duty types. Clamps to two tubes in gap between tank and fins. Kit includes mtg strap, 15 mm steel spacer and 5/16" bolt. 4 required on Heavy Duty types. **Kit No L-81886**

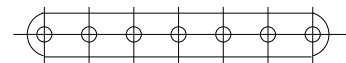
MOUNTING SYSTEMS



Tank Mount Angle Bracket

For use on Heavy Duty types. 3 mm Steel brackets with 11 mm bolt-down hole, may be used as removable clamps or may be welded to tanks by customer. 4 required.

Pt 67/03/03839 Single Row Cores A 70 B 41
Pt 67/03/03840 Two Row Cores. A 96 B 79



Mounting Strip

Mounting Strips are useful for attachment applications and are made from 1.4 mm steel 173mm long 26mm wide and have 7 x 8.5mm ES holes on 25.4mm centres. They are shipped standard when Kits L- 84741 or L-81822 are ordered.

Port Connections

Ports. All port nozzles are BSPP Female to ISO 228/1G. Although BSPT fitting may be used with thread sealer, the preferred fittings are BSPP O Ring type.

Light Duty Types. Rubber hoses must be used at the port connections. Use two wrenches when tightening fittings, one on the fitting and the other on the port nozzle hex.

Heavy Duty Types. May be hard piped providing excess strain is not applied to the port nozzles.