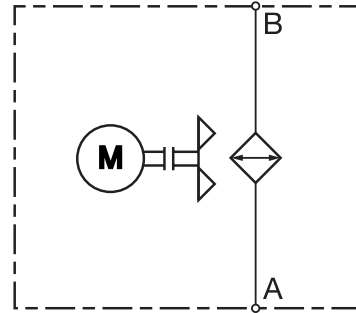


ELH Series Air Cooled Oil Coolers for Mobile Applications



Hydraulic Symbol



Description

These coolers use a combination of high performance cooling elements combined with high capacity hydraulic drive fan to give long trouble free operation in mobile hydraulic applications. The compact design allows the coolers to fit most equipment and provide the highest cooling performance in heat dissipation while minimizing space required.

Features

- ELD 2 - 5 coolers are designed with the inlet/outlet ports facing toward the back to help reduce fittings
- Available with internal pressure and temperature bypass
- All units feature a built in thermostat port
- Up to 180 HP cooling capacity
- Rated flows up to 90 gpm
- Hydraulic motor drive offers more cooling in a smaller package
- Optional thermal speed control and pressure relief
(Consult Factory)

Applications



Agricultural



Automotive



Construction



Industrial



**Commercial
Municipal**

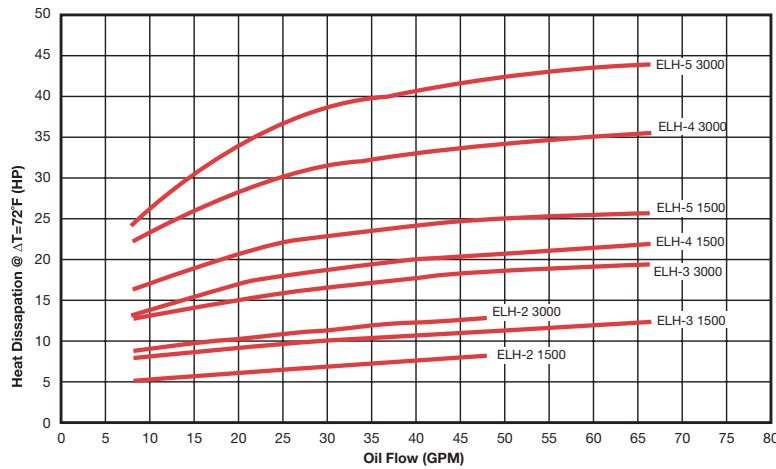


Railways

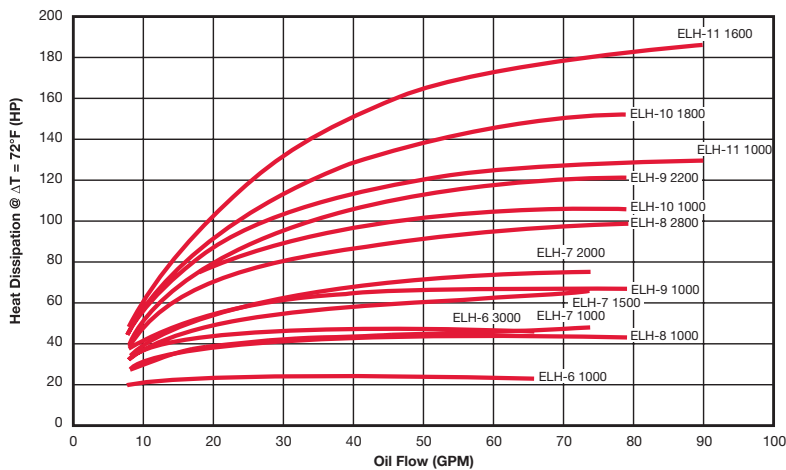
Model Code

				ELH	2	1.5	H6.3	S	F	XX	X	
Model	_____											
ELH	=	Air Cooled Oil Cooler with Hydraulic Motor Drive										
Size	(See the heat transfer table found on page 11 to determine the proper size.) _____											
2	_____											
3	_____											
4	_____											
5	_____											
6	_____											
7	_____											
8	_____											
9	_____											
10	_____											
11	_____											
Modification Number	(latest version always supplied) _____											
Hydraulic Motor Drive Displacement	_____											
H6.3	=	6.3 ccm/rev										
H14	=	14 ccm/rev										
H22	=	22 ccm/rev										
Air Flow Direction	_____											
S	=	Suction (standard)										
B	=	Blowing (consult factory)										
Accessories	_____											
F	=	Optional Foot Mount (sizes 2 - 4 only)										
IBT	=	thermostatic bypass valve										
IBP	=	inegrated bypass valve										
Opening Temperature	(IBT only) _____											
		Opening Temp.					Closing Temp.					
45	=	113°F (45°C)					131°F (55°C)					
50	=	130°F (55°C)					150°F (65°C)					
60	=	140°F (60°C)					158°F (70°C)					
Opening Pressure Drop	(IBT & IBP only) _____											
2	=	2 bar (29 psi)										
3	=	3 bar (45 psi)										

ELH Series Heat Dissipation Sizes 2 - 5

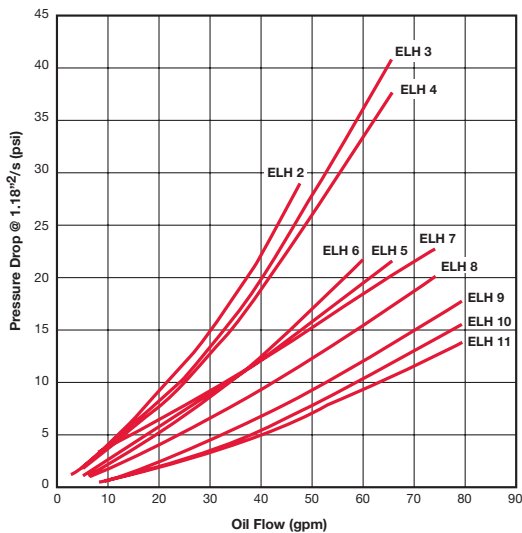


Sizes 6 - 11



Pressure Drops

Pressure differential Δp depending on flow rate Q and the viscosity of the oil.



*Pressure Drop Curves above using fluid with a viscosity of 30 mm²/s.
For other viscosities the result must be multiplied by the K Factors below.

Viscosity (SSU)	46	70	102	150	213	250	315	464	695
Viscosity (mm ² /s)	10	15	22	32	46	54	68	100	150
K Factor	0.5	0.65	0.77	1	1.3	1.52	1.9	2.8	5.3

Motor Flow Calculation

The motor oil flow Q can be calculated at nominal motor oil operating pressure as follows

$$Q = \frac{V_g \times n}{103 \times nvol} = l/min$$

V_g = motor displacement (cm³/r)

n = fan speed (RPM)

$nvol$ = volumetric efficiency = 90% at motor oil operating pressure of 150 bar (2175 psi)

3.85 liter = 1 gallon

Engineering Data

Model	Motor Displacement (cm ³ /rev)	Operating Speed Range (rpm)	Δp of motor @ max RPM @ 34 cts (psi)	Motor oil flow @ 1500 rpm (gpm)	Motor Max. Pressure (psi)	Continuous Motor Operating Pressure (psi)	Noise level @ 1000 RPM (dBa) (1 Meter)*	Weight (lbs.)
ELH 2	6.3 / 14 / 22	1000 / 3000	290	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	69	24.3
ELH 3	6.3 / 14 / 22	1000 / 3000	290	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	69	28.7
ELH 4	6.3 / 14 / 22	1000 / 3000	725 / 435 / 290	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	70	40.0
ELH 5	6.3 / 14 / 22	1000 / 3000	1015 / 435 / 290	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	70	53.0
ELH 6	6.3 / 14 / 22	1000 / 3000	2175 / 1015 / 725	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	70	94.6
ELH 7	14 / 22	1000 / 3000	TBA	6 / 9.7	4350 / 2900	3625 / 2175	77	TBA
ELH 8	6.3 / 14 / 22	1000 / 2800	2900 / 1160 / 870	2.8 / 6 / 9.7	4350 / 4350 / 2900	3625 / 3625 / 2175	76	147.7
ELH 9	14 / 22	1000 / 2200	1885 / 1305	6 / 9.7	4350 / 2900	3625 / 2175	78	187.4
ELH 10	14 / 22	1000 / 1800	3335 / 1885	6 / 9.7	4350 / 2900	3625 / 2175	82	242.5
ELH 11	14 / 22	1000 / 1600	3625 / 2175	6 / 9.7	4350 / 2900	3625 / 2175	83	341.7

*The noise levels are only a guide as acoustic properties vary and depend on the characteristics of the room, connections, viscosity, and resonance.

Construction

Housing	Welded Steel
Heat Exchanger	Aluminum
Fan	Plastic
Motor	Aluminum housing, Steel gears and shaft

Cooler Specifications

Maximum Viscosity	2000 cst.
Maximum Oil Temperature	266 F
Maximum Operating Pressure	230 psi
Mounting Position	All positions
Fluids	Mineral Oil to Din 51524 (for other fluids please consult factory)

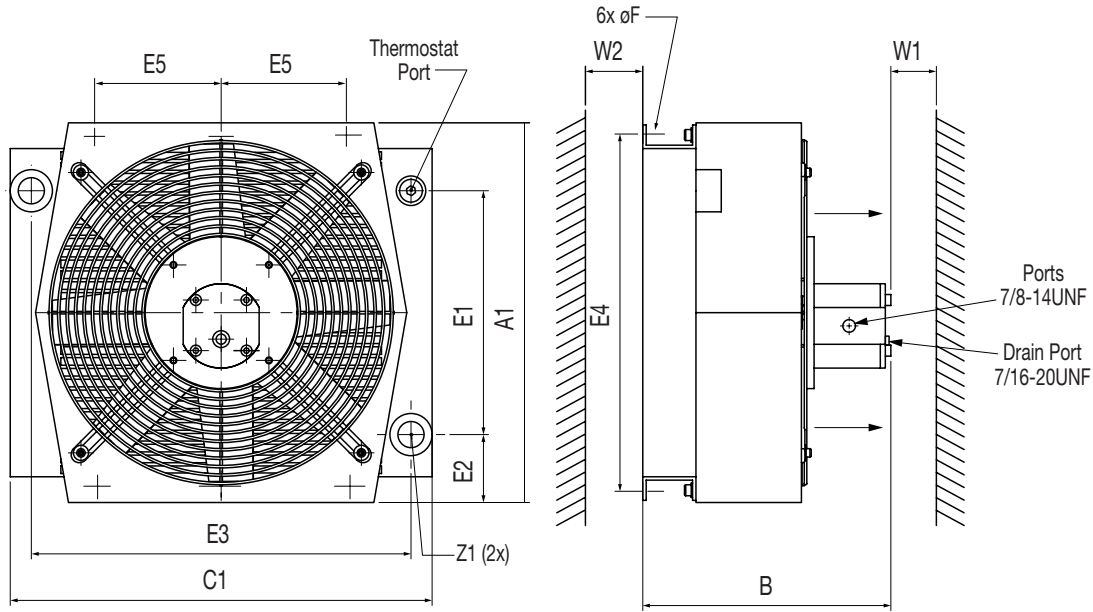
Hydraulic Motor Specifications

Fan Rotation	See arrow on housing
Fluids	Mineral Oil to Din 51524 DIN 51511
Filtration	ISO/DIS 4406 Code 19/16- Filtration grade B25>75
Maximum Outlet Side Pressure	1740 psi
Maximum Drian Pressure	29 psi
Fluid Viscosity Range	10 - 600 cst. (recommended 30 - 45 cst.)
Fluid Temperature Range	Up to 194° F

ELH Series

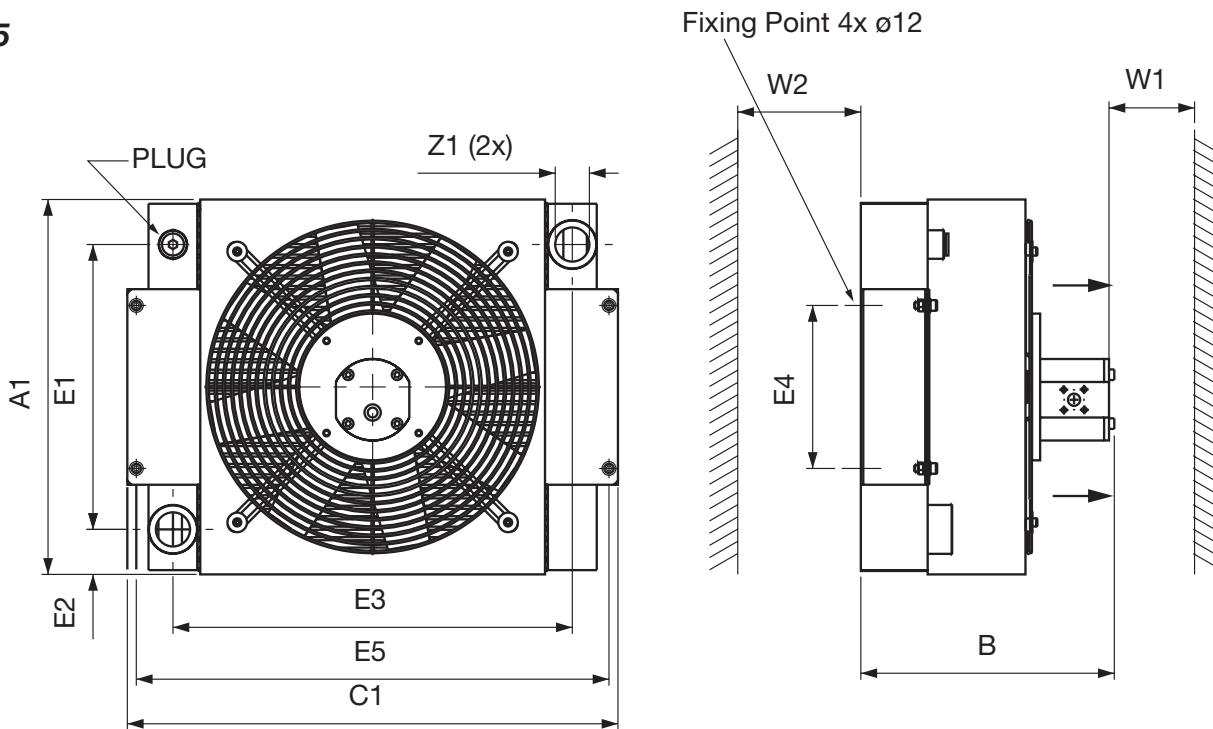
Dimensions

Sizes 2 - 4



Size	A1	B 6.3 cc	B 14 cc	B 22 cc	C1	E1	E2	E3	E4	E5	F	W1	W2	Z1	Thermostat Port
ELH 2	12.32	10.63	11.14	11.70	15.12	7.83	2.20	12.76	11.34	3.15	0.55 x 0.4	7.87	5.91	1-5/16"-12 UN	1/2" NPT
ELH 3	14.02	10.99	11.49	12.05	16.54	9.06	2.48	14.57	12.95	3.94	0.55 x 0.4	9.84	7.09	1-5/16"-12 UN	1/2" NPT
ELH 4	17.72	11.56	12.06	12.62	19.69	11.38	3.17	17.72	16.57	5.91	0.49 x 0.39	13.78	7.87	1-5/16"-12 UN	1/2" NPT

Size 5



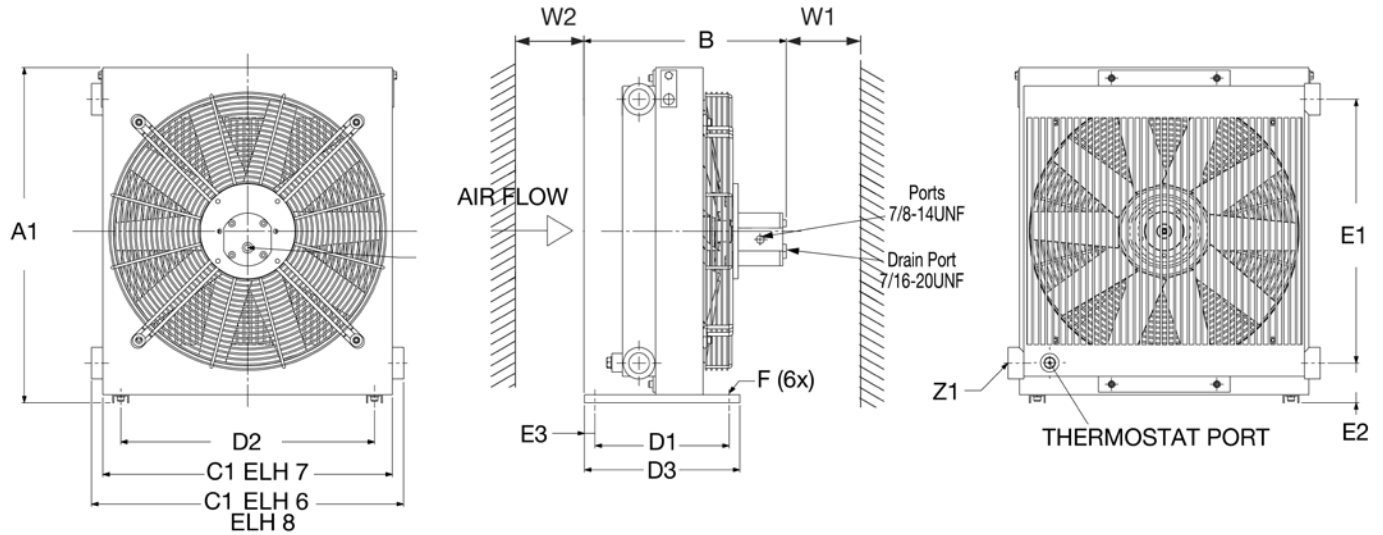
Size	A1	B 6.3 cc	B 14 cc	B 22 cc	C1	E1	E2	E3	E4	E5	F	W1	W2	Z1	Thermostat Port
ELH 5	18.11	12.25	12.73	13.29	23.70	13.78	2.17	19.29	7.87	22.83	0.47	15.75	9.84	1-5/8"-12 UN	1/2" NPT

Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print.
Dimensions are in inches.

ELH Series

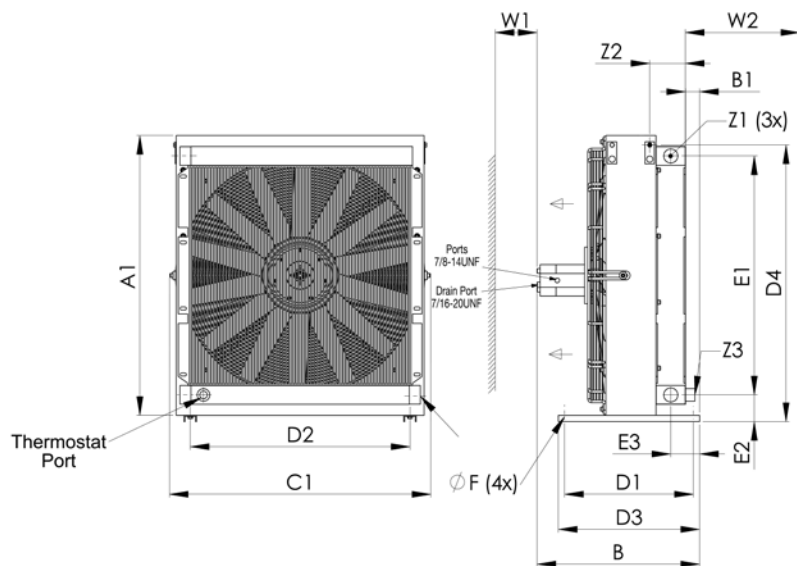
Dimensions

Sizes 6 - 8



Size	A1	B 6.3 cc	B 14 cc	B 22 cc	C1	D1	D2	D3	E1	E2	E3	F	W1	W2	Z1	Thermostat Port
ELH 6	25.12	14.87	15.37	15.93	23.54	10.04	18.98	11.61	19.69	3.07	0.79	0.35	39.37	23.62	1-5/8"-12 UN	1/2" NPT
ELH 7	28.58	-	17.50	18.06	27.80	16.14	22.05	17.72	23.62	2.87	0.79	0.35	42.00	25.00	1-5/8"-12 (F)	1/2" NPT
ELH 8	30.08	15.06	15.57	16.13	27.64	10.04	18.98	11.61	24.74	3.06	0.79	0.35	43.31	27.56	1-5/8"-12 UN	1/2" NPT

Sizes 9 - 11



Size	A1	B 6.3 cc	B 14 cc	B 22 cc	C1	D1	D2	D3	E1	E2	E3	F	W1	W2	Z1	Thermostat Port
ELH 9	35.83	-	19.88	20.44	32.56	16.14	27.56	17.72	29.92	3.35	3.62	0.35	47.24	35.43	1-7/8"-12 UN	1/2" NPT
ELH 10	41.73	-	20.72	21.28	38.28	18.11	27.56	19.69	35.83	3.54	3.66	0.35	55.12	35.43	1-7/8"-12 UN	1/2" NPT
ELH 11	46.40	-	21.49	22.05	42.91	18.11	27.56	19.69	41.73	2.95	3.66	0.35	62.99	39.37	1-7/8"-12 UN	1/2" NPT

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