

HYDAC INTERNATIONAL

Standard Coolers

Air Cooled / Liquid Cooled



HYDAC

Components, Systems and Service. All from one Company.

Our fluid engineering solutions are defined by the scope and complexity of our customers' requirements.

Our products range from individually designed components in the fields of fluid engineering, hydraulics and electronics right up to complete systems for specific functions.

All components and systems are conceived and designed in-house. Experienced industrial and product specialists develop innovative products and efficient solutions for high-quality, cost-effective production. Throughout the globe, our production facilities share one common goal: quality. We take great pride in both our products and solutions.

Industries and Applications

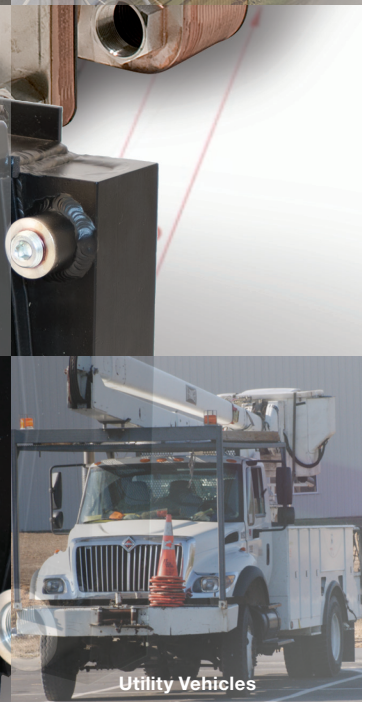
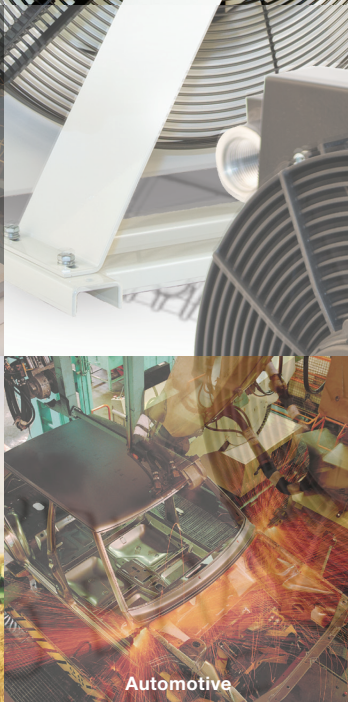
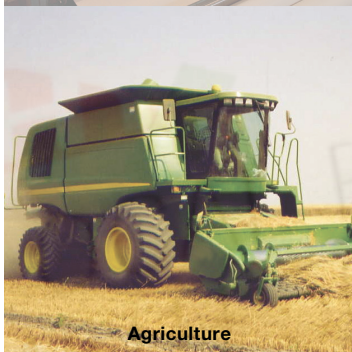
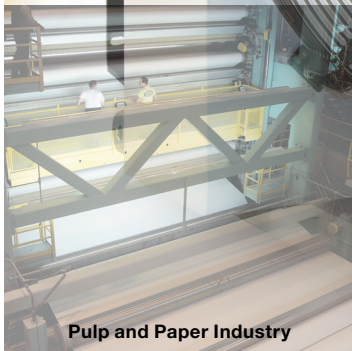
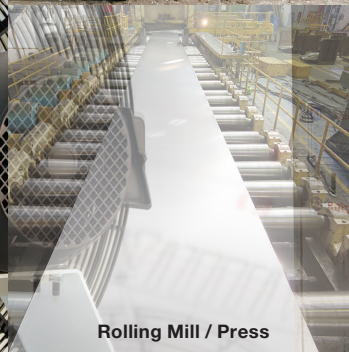


TABLE OF CONTENTS

Section:

Overview

Cooling System Expertise – **A2**

A

Mobile Coolers

ELD Series – **B2**; ELH Series – **B8**; ELX Series – **B14**

B

Industrial Coolers

OKC Series – **C2**; OK Series – **C8**; OK LN Series – **C16**; ELD M Series – **C26**; SC Series – **C30**; Air Cooled Accessories – **C38**; H Series – **C44**

C

Miscellaneous

Comparing Heat Exchanger Performance – **D1**; Competitive Crossovers – **D2**

D



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NOTE

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Cooling System Expertise - For Industrial and Mobile Engine and e-Mobility Applications

Hydraulic and lubrication systems touch nearly every aspect of industrial equipment and mobile machines, so high performance and reliability is crucial. Whether the requirement is hydraulic power transmission, heat removal, corrosion protection, or lubrication; fluid quality plays an important role.

For mobile machines, varying ambient conditions make temperature control essential. In hydraulic systems, heat is lost during energy transport and conversion. The function of a cooling system is to dissipate this heat in order to ensure efficient machine performance. Effective

cooling can contribute to increased fluid and equipment service life, thereby reducing life cycle costs.

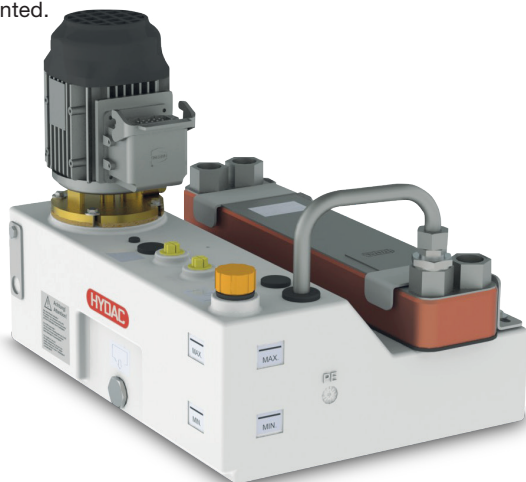
HYDAC coolers, heat exchangers, and cooling systems and combi-coolers not only perform well in hydraulic systems, they are also an effective means of cooling electric drives and motors, engines, generators, inverters and transformers, as well as mobile machine gearbox lubrication systems.

Whether the cooling medium is air or water, return or bypass flow, HYDAC has standard and customized solutions to meet the most demanding requirements.

Examples of HYDAC Expertise:

FWKS Fluid / Water Cooling Systems

- Cooling of circuits which use mineral oil or water glycol
- Compact design with plastic tank, circulation pump and plate heat exchanger
- Various sizes with cooling capacities up to 100 kW and flow rates up to 150 l/min
- Can be used as a temperature-controlled intermediate circuit. In this way the contamination and corrosion in the coolant circuits which could arise as a result of direct cooling with poor water quality is prevented.



Combi-coolers

From combining an engine radiator and charge air into one package, to adding a hydraulic oil cooler, transmission oil cooler and/or a fuel cooler, our combi-coolers can be designed for any application.



FLKS Fluid / Air Cooling Systems

- Cooling of circuits which use mineral oil or water glycol
- Compact design with plastic tank, circulation pump, cooling element and fan
- Machine tools and e-Mobility cooling



B Air Cooled Oil Coolers for Mobile Applications

These coolers use a combination of high performance cooling elements, and long life DC electric or hydraulically driven fans to give extended, trouble-free operation in mobile hydraulic applications. The compact design allows the coolers to fit most equipment and provides the highest cooling performance in heat dissipation while minimizing space is required.

MOBILE COOLERS

ELD Series

DC Motor Drive



Description

These coolers use a combination of high performance cooling elements and long life DC electrical powered fans to give extended trouble-free operation in mobile hydraulic applications. The compact design allows the coolers to fit most equipment and provides the highest cooling performance in heat dissipation while minimizing space required.

Features

- Most coolers are designed with the inlet/outlet ports facing toward the back to help reduce fittings
- All coolers feature a built in thermostat port
- 12 and 24 volt DC fans
- Up to 47 HP cooling capacity
- Rated flows up to 47 gpm
- Motor lifetimes up to 10,000 hours
- Available with internal pressure or thermal bypass

Applications



Agricultural



Material Handling



Construction



Utility



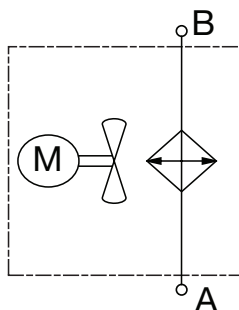
Railways



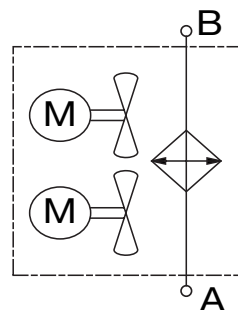
Forestry

Hydraulic Symbol

Sizes 1 - 4.5



Sizes 5 - 6



General

Materials	Housing: welded steel Heat Exchanger: aluminum, brazed bar-and-plate Fan: plastic
Mounting Orientation	Any orientation
Maximum Pressure	230 psi (16 bar)
Fluids	Mineral oil to DIN 51524 Part 1 and 2 (Contact factory for other fluid usages)
Ambient Temperature	50° – 104°F (10° – 40°C)
Max. Oil Temperature	266°F (130°C)
Standard Airflow Direction	Air pulled across heat exchanger
Filtration	ISO/DIS 4406 Code 19/16- Filtration Grade B25>75
Environmental Protection Class	IP68
Standard Fan Connector	AMP Code 180908

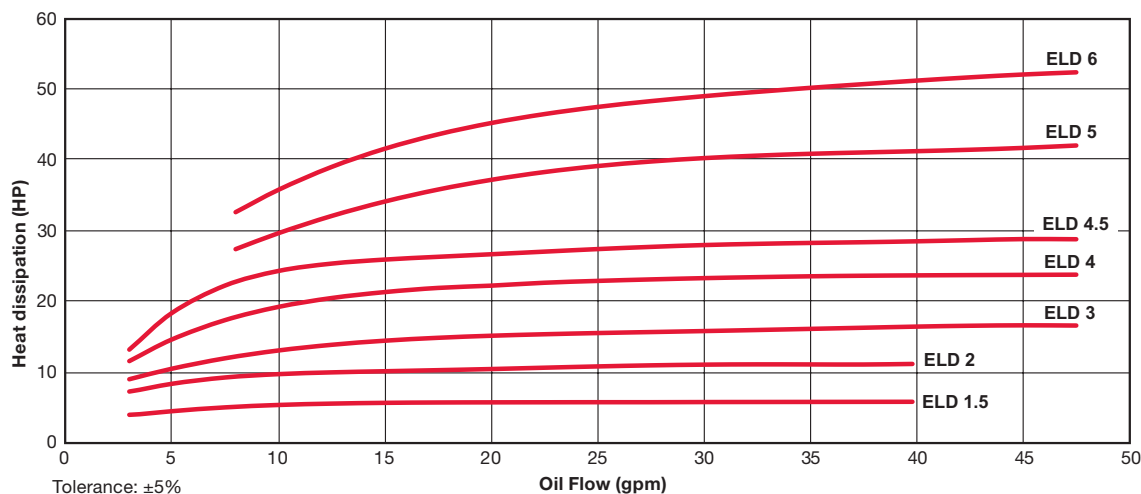
Preferred ELD Models	P/N
ELD1H3.512S SC	2592772
ELD2H3.512S SC	2592521
ELD3H3.512S QS	2593214
ELD4.5H3.512S QS	2592525
ELD4H3.512S QS	2592774
ELD5H3.512S SC	2592776
ELD6H3.512S SC	2592778

Model Code

Model	ELD	1.5H	3.5	12	S	X	X	X
= Air Cooled Oil Cooler with DC-Powered Fan (<i>Brushless option available, contact factory</i>)								
Size	1H, 1.5H, 2H, 3H, 4H, 4.5H, 5H, 6H							
Modification Number (latest version always supplied)								
Fan Motor Voltage								
12	= 12 volt DC							
24	= 24 volt DC							
Air Flow Direction								
S	= Suction (<i>through heat exchanger, exhausting through fan</i>)							
B	= Blowing (<i>through fan, exhausting through heat exchanger</i>)							
Options								
(omit)	= None							
IBT	= Internal Thermostatic Bypass Valve							
IBP	= Internal Pressure Bypass Valve							
Opening Temperature (IBT Only)								
45	= 113°F (45°C) (<i>closes at 131°F</i>)							
50	= 130°F (50°C) (<i>closes at 150°F</i>)							
60	= 140°F (60°C) (<i>closes at 158°F</i>)							
Opening Pressure Drop (IBT & IBP Only)								
2	= 2 bar (29 psi)							
3	= 3 bar (45 psi)							
4	= 4 bar (58 psi)							
TS-120	= Inline Thermostat, Fixed 120°F							
TS-140	= Inline Thermostat, Fixed 140°F							
TS-160	= Inline Thermostat, Fixed 160°F							
F	= Foot Mount							

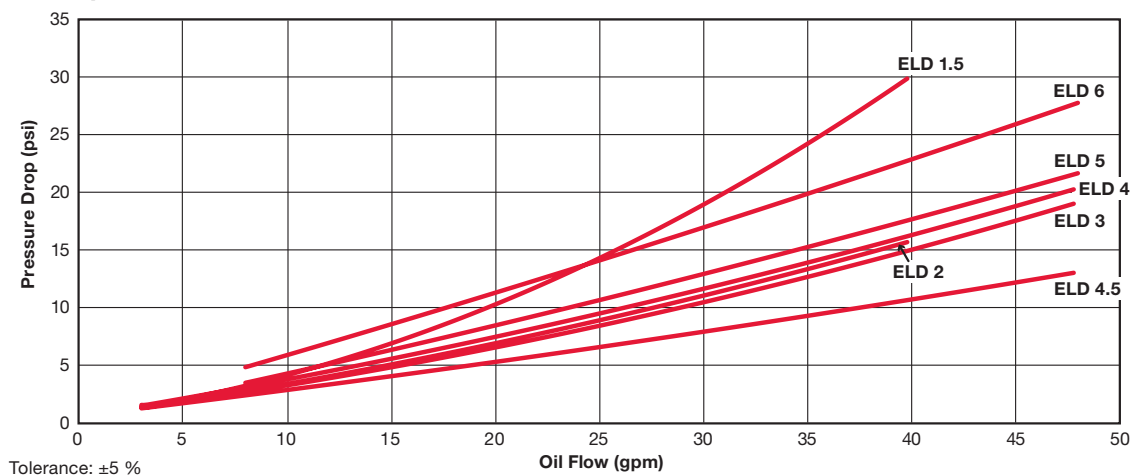
Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Heat Dissipation @ $\Delta T = 72^\circ\text{F}$



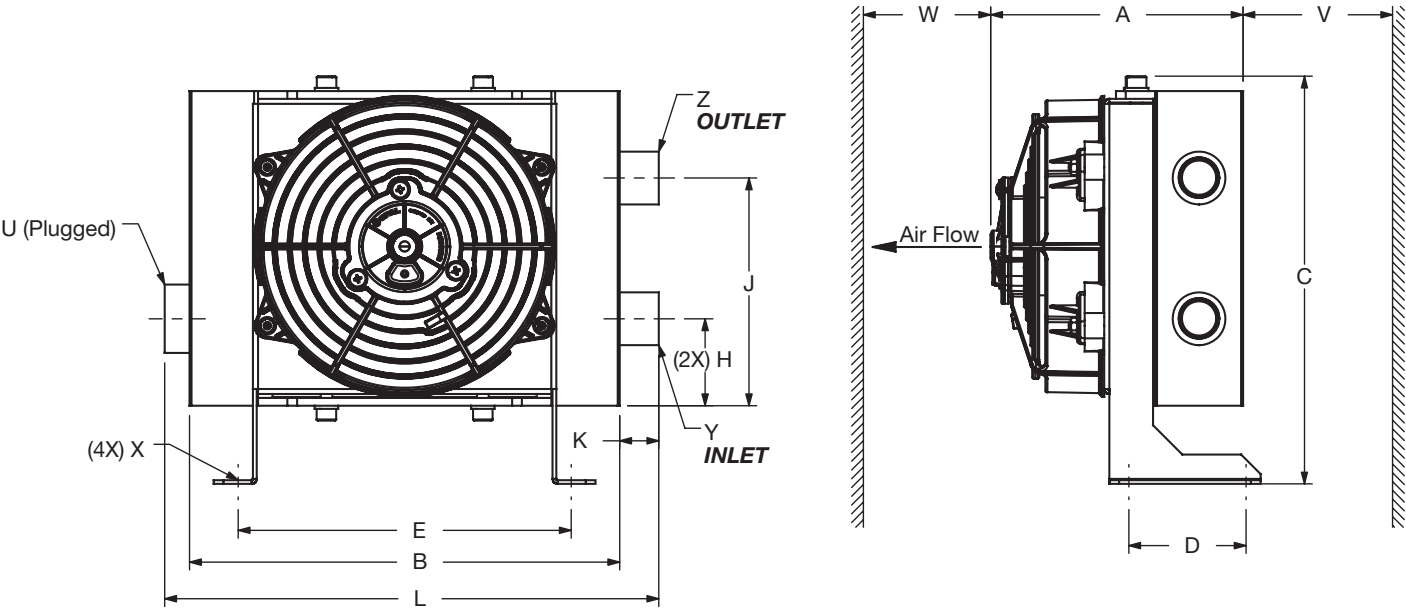
Cooling capacity is dependent on the oil flow rate and the temperature difference ΔT between oil inlet and air temperature.

Pressure Drop @ 30 cSt



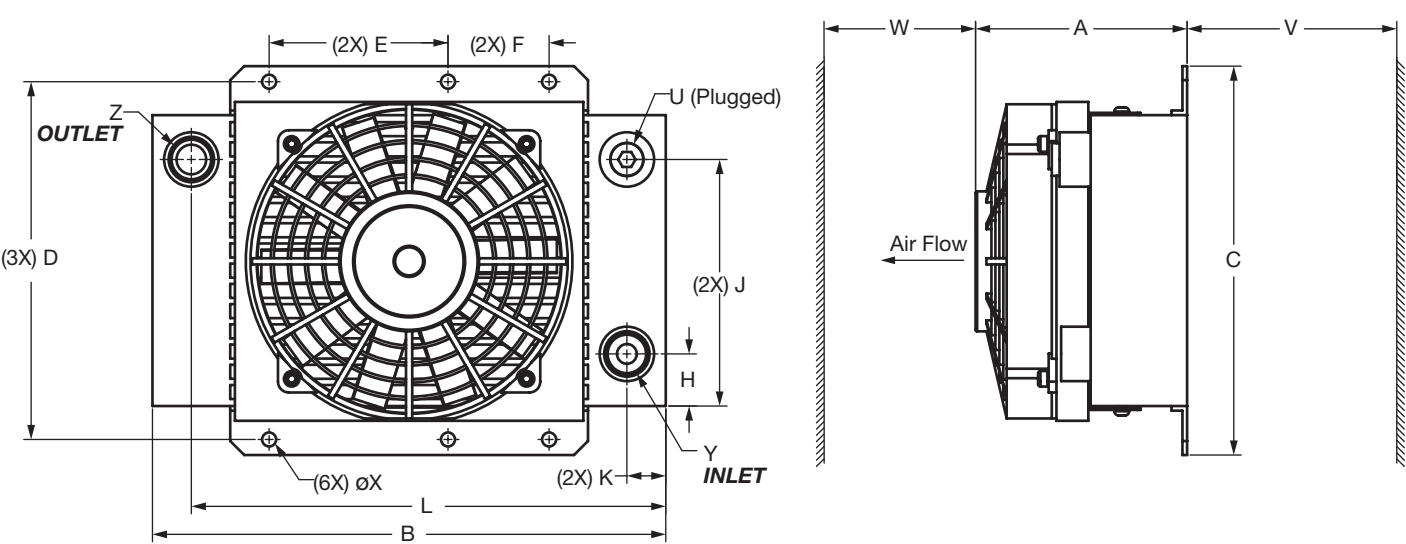
MOBILE COOLERS

Dimensions ELD Size 0



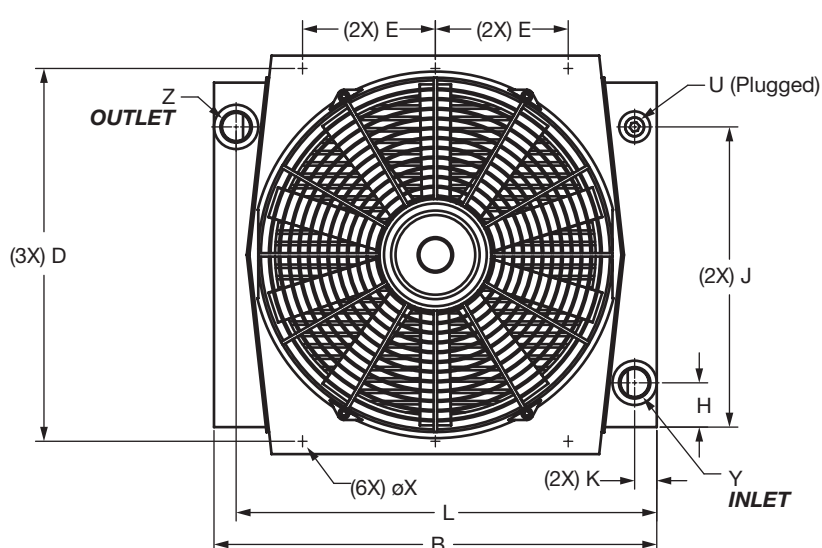
Size	A	B	C	D	E	F	H	J	K	L	V	W	U	X	Y	Z
0	5.51 [140]	8.66 [220]	8.15 [207]	2.24 [57]	6.69 [170]	N/A	1.77 [45]	4.61 [117]	0.79 [20]	9.96 [253]	3.94 [100]	7.87 [200]	1/2" NPT	ø0.25x0.50 [ø6.5x12]	SAE-8	SAE-8

Dimensions ELD Size 1 & 1.5



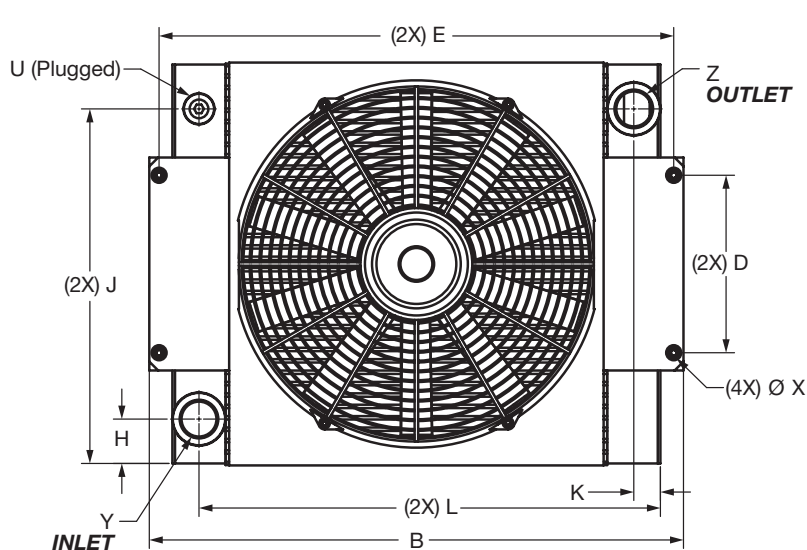
Size	A	B	C	D	E	F	H	J	K	L	V	W	U	X	Y	Z
1	4.69 [119]	11.81 [300]	9.72 [247]	8.86 [225]	2.56 [65]	1.97 [50]	1.10 [28]	6.02 [153]	0.98 [25]	9.84 [250]	3.94 [100]	7.87 [200]	1/2" NPT	ø0.35 [ø9]	SAE-12	SAE-12
1.5	5.35 [136]	12.99 [330]	9.84 [250]	9.06 [230]	4.53 [115]	2.56 [65]	1.32 [34]	6.24 [158]	0.98 [25]	12.01 [100]	3.94 [100]	7.87 [200]	1/2" NPT	ø0.35 [ø9]	SAE-12	SAE-12

Dimensions ELD Size 2 - 4



Size	A	B	C	D	E	F	H	J	K	L	V	W	U	X	Y	Z
2	8.15 [207]	15.12 [384]	12.32 [313]	11.34 [288]	3.15 [80]	N/A	1.18 [30]	9.02 [229]	1.18 [30]	13.94 [354]	5.91 [150]	9.84 [250]	1/2" NPT	ø0.39x0.55 [ø10x14]	SAE-16	SAE-16
3	8.15 [207]	16.54 [420]	14.02 [356]	12.95 [329]	3.94 [100]	N/A	1.42 [36]	10.47 [266]	0.98 [25]	15.55 [395]	7.09 [180]	11.81 [300]	1/2" NPT	ø0.39x0.55 [ø10x14]	SAE-16	SAE-16
4	7.83 [199]	19.69 [500]	17.72 [450]	16.57 [421]	5.91 [150]	N/A	1.97 [50]	13.35 [339]	0.98 [25]	18.7 [475]	7.87 [200]	15.75 [400]	1/2" NPT	ø0.41x0.50 [ø11x13]	SAE-16	SAE-16

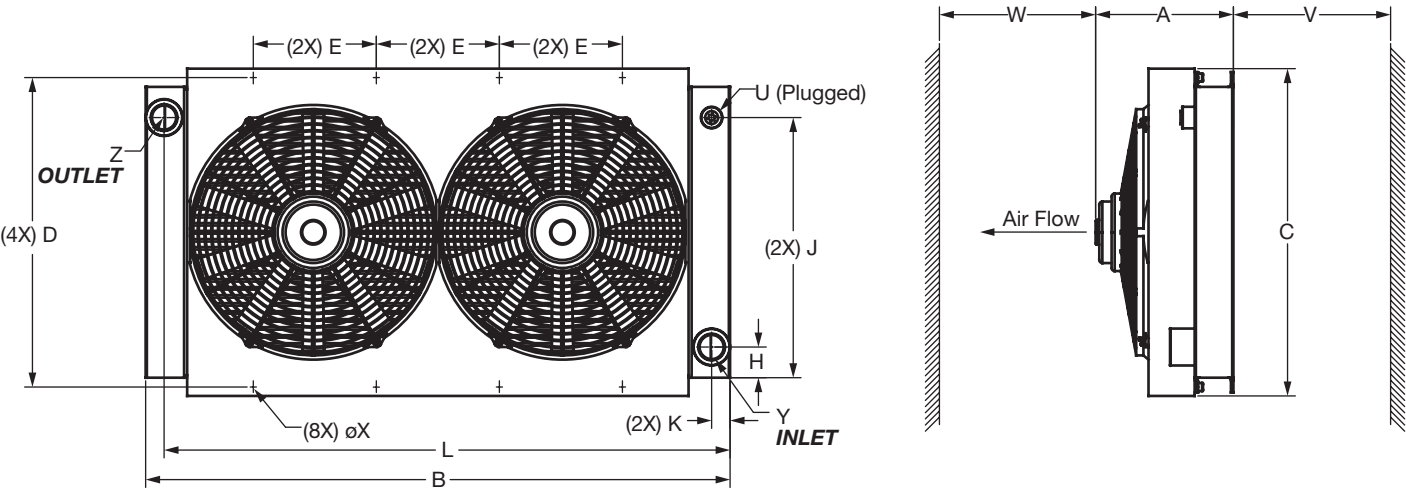
Dimensions ELD Size 4.5



Size	A	B	C	D	E	F	H	J	K	L	V	W	U	X	Y	Z
4.5	8.58 [218]	23.70 [602]	17.87 [454]	7.87 [200]	22.83 [580]	N/A	1.97 [50]	15.73 [400]	1.18 [30]	20.47 [520]	7.87 [200]	15.75 [400]	1/2" NPT	ø0.47 [ø12]	SAE-20	SAE-20

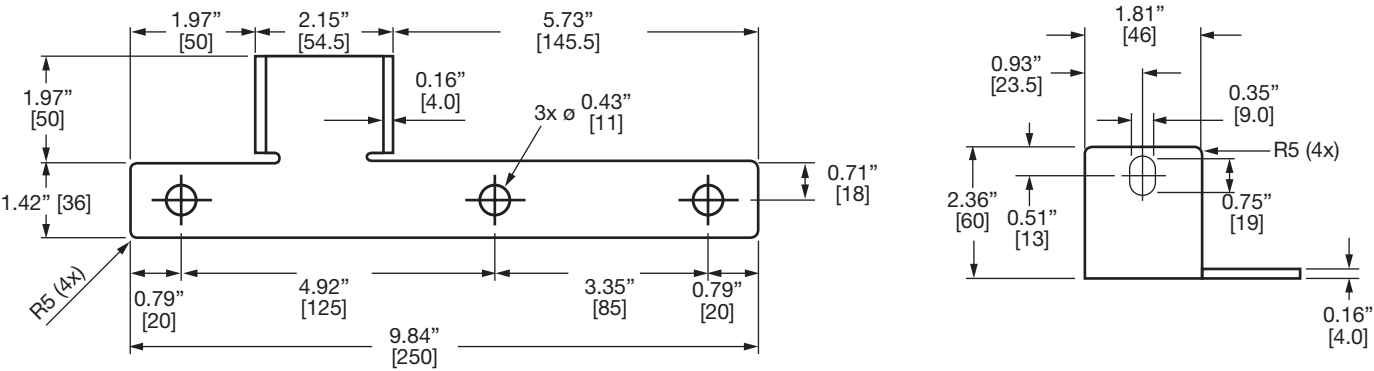
MOBILE COOLERS

Dimensions ELD Size 5 - 6



Size	A	B	C	D	E	F	H	J	K	L	V	W	U	X	Y	Z
5	9.13 [232]	31.89 [810]	18.9 [480]	17.72 [450]	6.69 [170]	N/A	1.95 [50]	14.59 [371]	1.18 [30]	30.73 [781]	7.87 [200]	15.75 [400]	1/2" NPT	ø0.39x0.55 [ø10x14]	SAE-20	SAE-20
6	8.86 [225]	37.4 [950]	20.94 [532]	19.8 [503]	7.87 [200]	N/A	1.96 [50]	16.65 [423]	1.18 [30]	36.22 [920]	9.84 [250]	19.69 [500]	1/2" NPT	ø0.39x0.71 [ø10x18]	SAE-20	SAE-20

Dimensions ELD Foot Bracket Size 2 - 4 / 5 - 6



This image shows a full page of graph paper. The background is white, and it is covered by a uniform grid of thin, light gray horizontal and vertical lines. These lines intersect to form a series of small, identical squares across the entire surface. There are no margins, text, or other markings on the page.



MOBILE COOLERS

ELH Series

Hydraulic Motor Drive



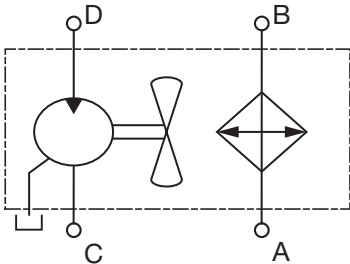
Description

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

Features

- ELH 2 - 5 coolers are designed with the inlet/outlet ports facing towards 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 (consult factory for higher flows)
 - Hydraulic motor drive offers more cooling in a smaller package
 - Optional thermal speed control and pressure relief
- (Contact Factory)

Hydraulic Symbol



Applications



Agricultural



Offshore



Construction



Railways



Industrial



Utility



Material Handling



Forestry

General

Materials	Housing: welded steel Heat exchanger: aluminum, brazed bar-and-plate Fan: plastic Motor: aluminum housing, steel gears and shaft
Max. Oil Temp.	266°F (130°C)
Max. Operating Pressure	230 psi (16 bar)
Mounting Orientation	All positions
Fluids	Mineral oil to DIN 51524 Part 1 and 2 (Contact factory for other fluid usages)
Filtration	ISO/DIS 4406 Code 19/16- Filtration grade B25>75
Motor	– Max. Drain Pressure: 29 psi (2 bar) – Fluid Viscosity Range:10-600 cSt (recommended 30-45 cSt) – Fluid Temperature Range: up to 194° F (90°C)

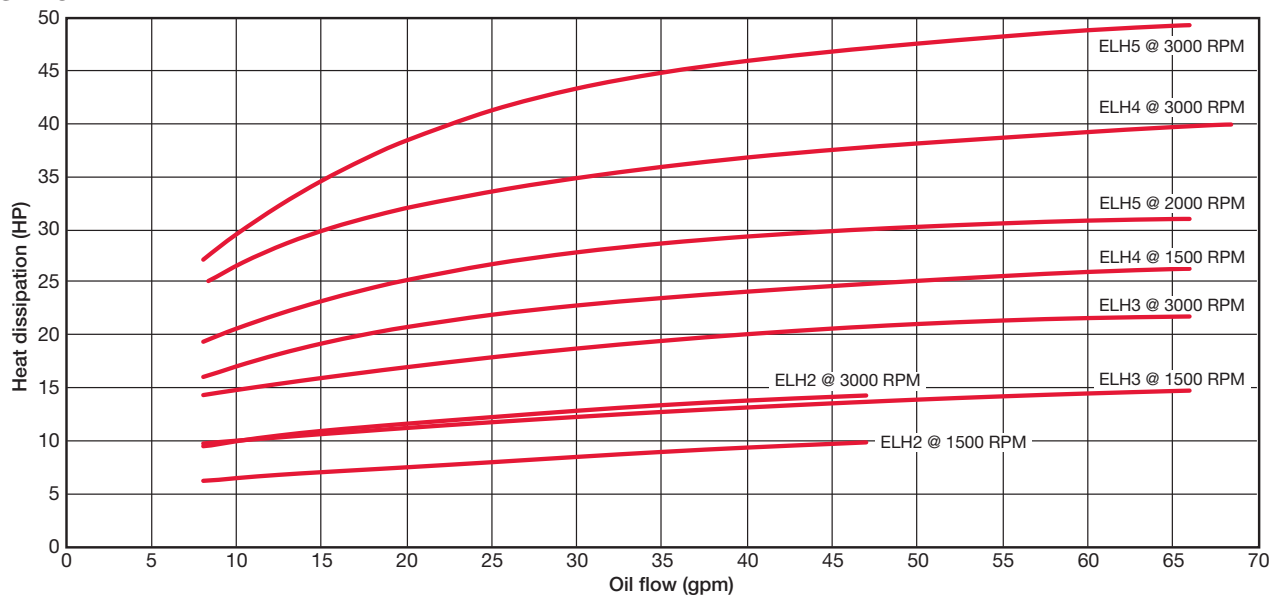
Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

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

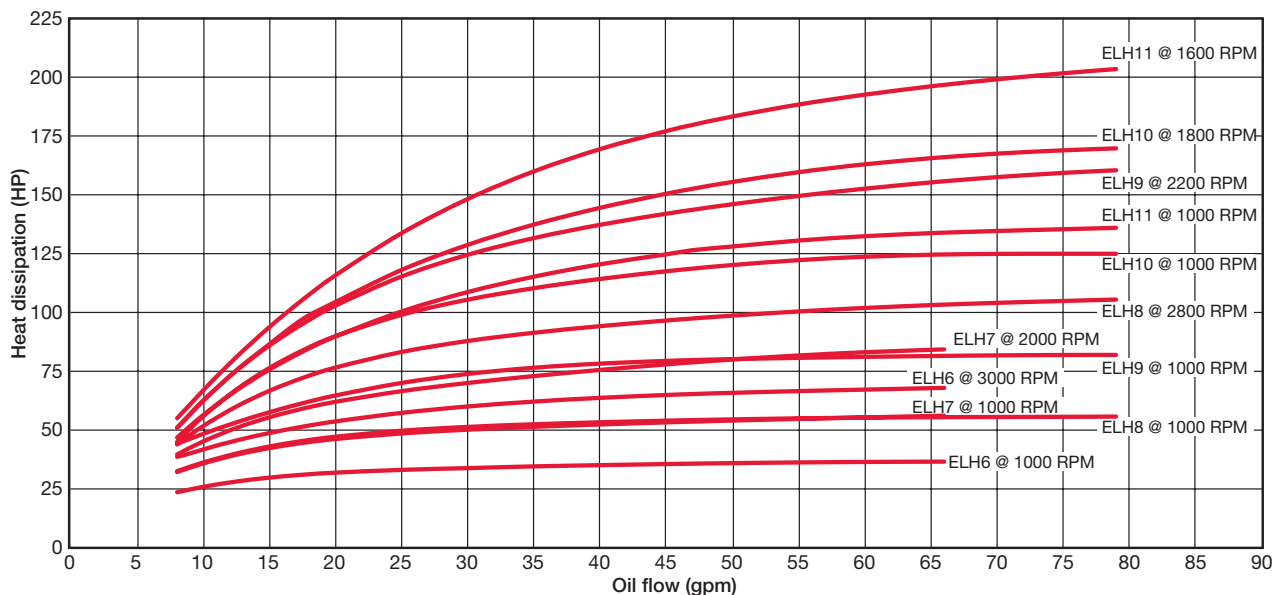
MOBILE COOLERS

Heat Dissipation @ $\Delta T = 72^{\circ}\text{F}$

Sizes 2-5

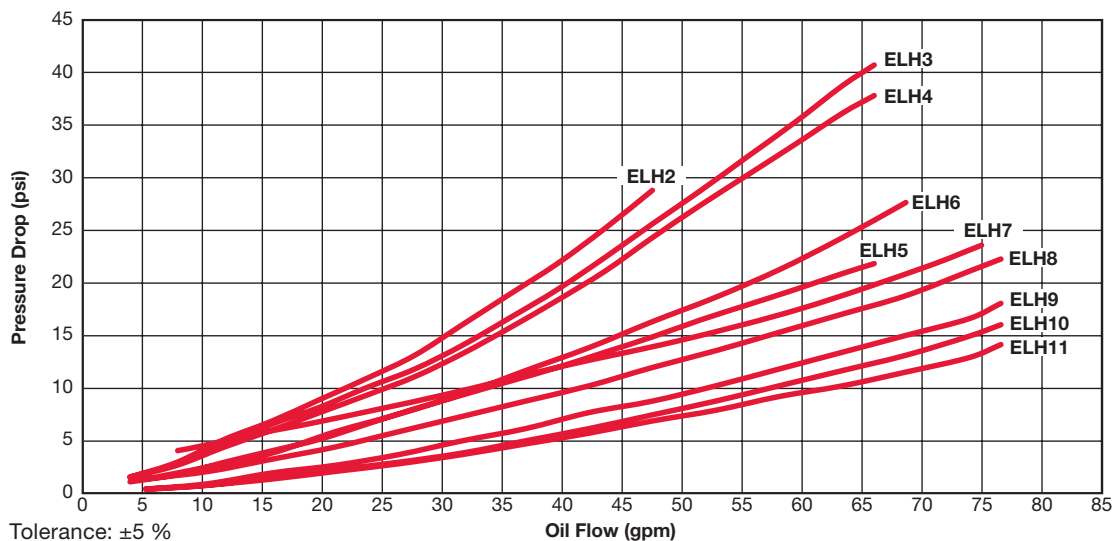


Sizes 6-11



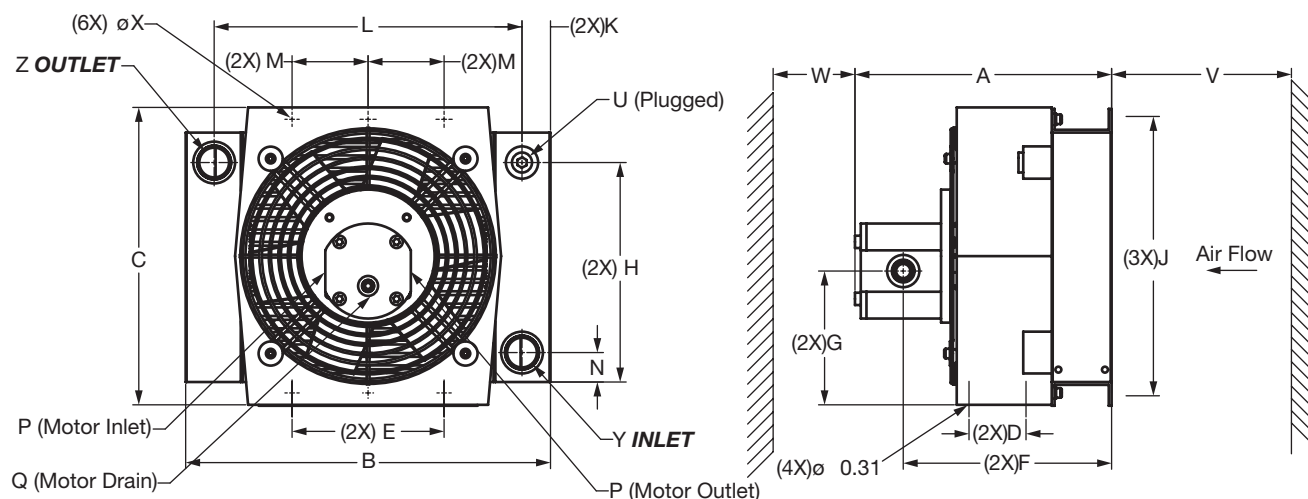
Cooling capacity is dependent on the oil flow rate and the temperature difference ΔT between oil inlet and air inlet.

Pressure Drop @ 30cSt



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

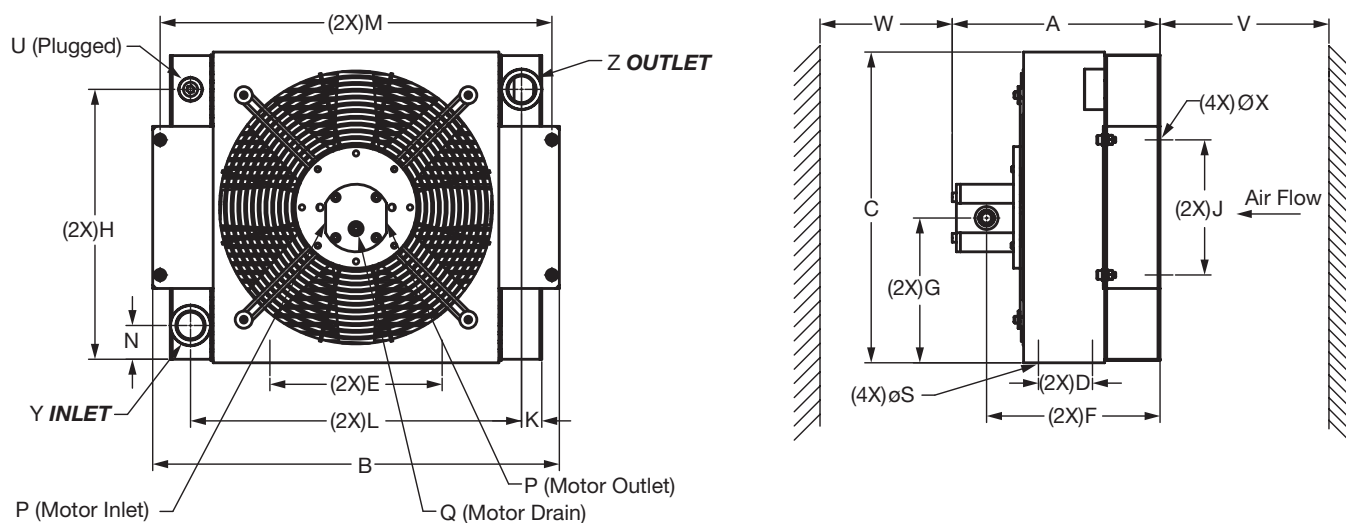
Dimensions ELH Size 2 - 4



Size	A (6.3cc)	A (14cc)	A (22cc)	B	C	D	E	F (6.3cc)	F (14cc)	F (22cc)	G	H	J
2	10.63 [270]	11.13 [283]	11.70 [297]	15.12 [384]	12.32 [313]	2.36 [60]	6.30 [160]	8.63 [219]	8.88 [226]	9.17 [233]	5.58 [142]	9.09 [231]	11.48 [292]
3	10.97 [279]	11.47 [291]	12.03 [306]	16.54 [420]	14.02 [356]	3.15 [80]	9.45 [240]	8.97 [228]	9.22 [234]	9.50 [241]	6.39 [162]	10.47 [266]	12.95 [329]
4	11.56 [294]	12.06 [306]	12.62 [321]	19.69 [500]	17.72 [450]	3.15 [80]	10.52 [267]	9.56 [243]	9.81 [249]	10.09 [256]	8.24 [209]	13.35 [339]	16.57 [421]

Size	K	L	M	N	P	Q	U	V	W	X	Y	Z
2	1.18 [30]	12.76 [324]	3.15 [80]	1.32 [34]	SAE-10	SAE-4	1/2" NPT	5.91 [150]	7.87 [200]	ø0.39x0.59 [ø10x15]	SAE-16	SAE-16
3	0.98 [25]	14.57 [370]	3.94 [100]	1.42 [36]	SAE-10	SAE-4	1/2" NPT	7.09 [180]	9.84 [250]	ø0.39x0.59 [ø10x15]	SAE-16	SAE-16
4	0.98 [25]	17.72 [450]	5.91 [150]	1.97 [50]	SAE-10	SAE-4	1/2" NPT	7.87 [200]	13.78 [350]	ø0.39x0.59 [ø10x15]	SAE-16	SAE-16

Dimensions ELH Size 5



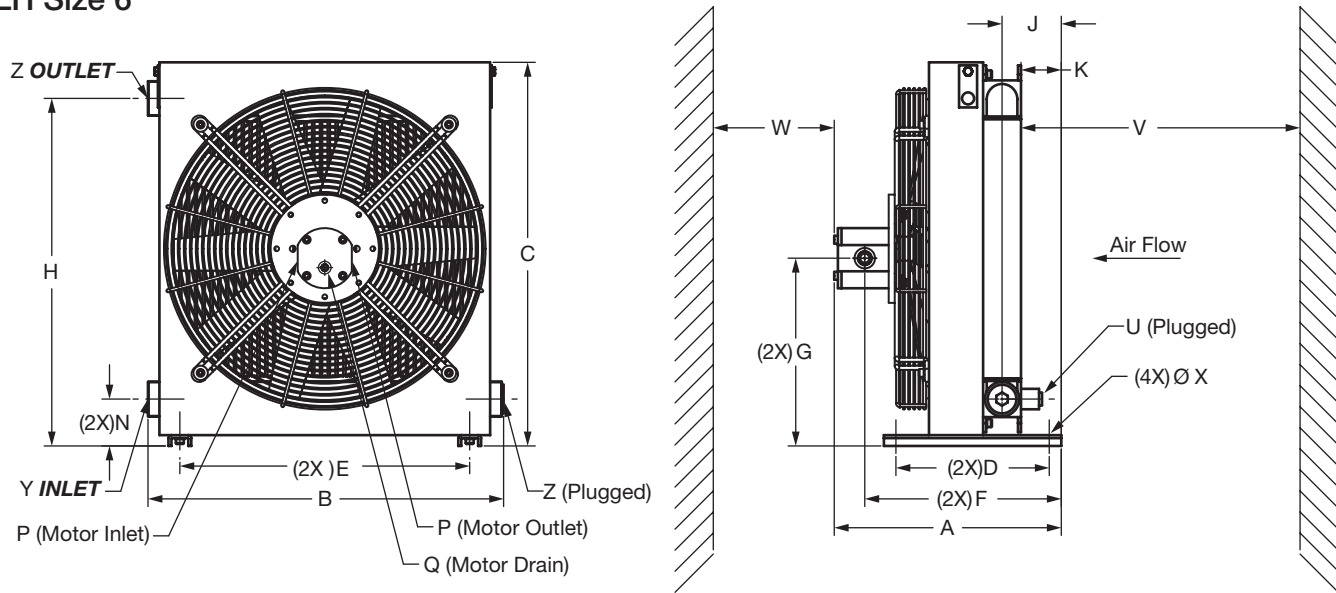
Size	A (6.3cc)	A (14cc)	A (22cc)	B	C	D	E	F (6.3cc)	F (14cc)	F (22cc)	G	H	J
5	12.11 [308]	12.61 [320]	13.17 [335]	23.70 [602]	18.11 [460]	3.15 [80]	10.04 [255]	10.11 [257]	10.36 [263]	10.64 [270]	8.44 [214]	15.73 [400]	7.87 [200]

Size	K	L	M	N	P	Q	U	V	W	X	Y	Z
5	1.19 [30]	19.29 [490]	22.83 [580]	1.97 [50]	SAE-10	SAE-4	1/2" NPT	9.84 [250]	15.75 [400]	ø0.47 [ø12]	SAE-20	SAE-20

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

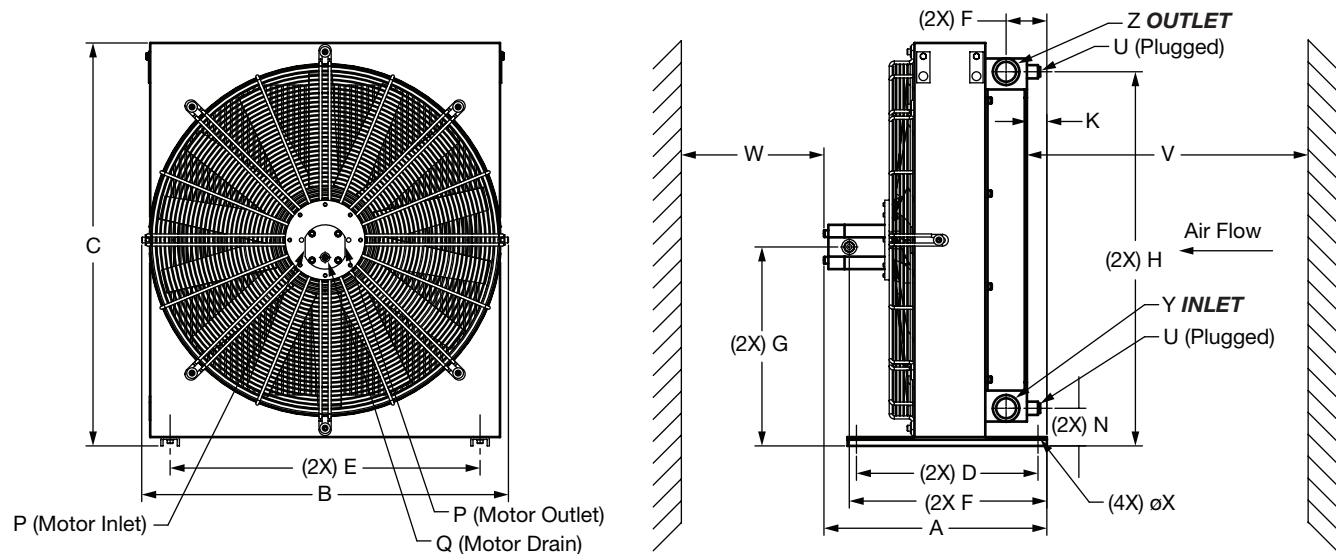
MOBILE COOLERS

Dimensions ELH Size 6



Size	A (6.3cc)	A (14cc)	A (22cc)	B	C	D	E	F (6.3cc)	F (14cc)	F (22cc)	G	H	J
6	14.87 [378]	15.37 [390]	15.93 [405]	23.17 [589]	25.12 [638]	10.04 [255]	18.98 [482]	12.87 [327]	13.12 [333]	13.40 [340]	12.30 [312]	22.76 [578]	3.88 [99]
Size	K	L	M	N	P	Q	U	V	W	X	Y	Z	
6	2.64 [67]	N/A	N/A	3.08 [78]	SAE-10	SAE-4	1/2" NPT	22.62 [575]	39.37 [1000]	ø0.35 [ø9]	SAE-20	SAE-20	

Dimensions ELH Size 7 - 8

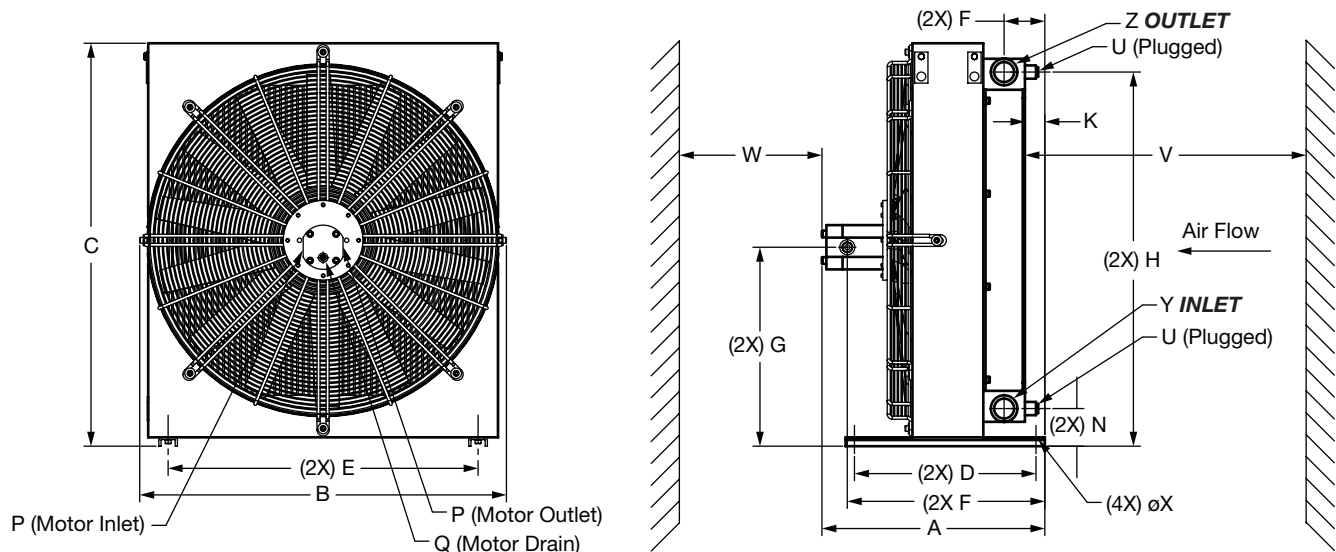


Size	A (6.3cc)	A (14cc)	A (22cc)	B	C	D	E	F (6.3cc)	F (14cc)	F (22cc)	G	H	J
7	N/A	17.72 [450]	18.06 [459]	27.80 [706]	28.58 [726]	16.14 [410]	22.05 [560]	N/A	15.24 [387]	15.52 [394]	14.07 [357]	26.50 [673]	2.89 [73]
8	15.07 [383]	15.57 [395]	16.13 [410]	27.24 [692]	30.08 [764]	10.04 [255]	18.98 [482]	13.06 [332]	13.31 [338]	13.59 [345]	14.78 [375]	27.76 [705]	3.70 [94]

Size	K	L	M	N	P	Q	U	V	W	X	Y	Z
7	1.65 [42]	N/A	N/A	2.87 [73]	SAE-10	SAE-4	1/2" NPT	25.00 [635]	42.00 [1067]	ø0.39x0.78 [ø10x20]	SAE-20	SAE-20
8	2.09 [53]	N/A	N/A	3.03 [77]	SAE-10	SAE-4	1/2" NPT	27.56 [700]	43.31 [1100]	ø0.35 [ø9]	SAE-20	SAE-20

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

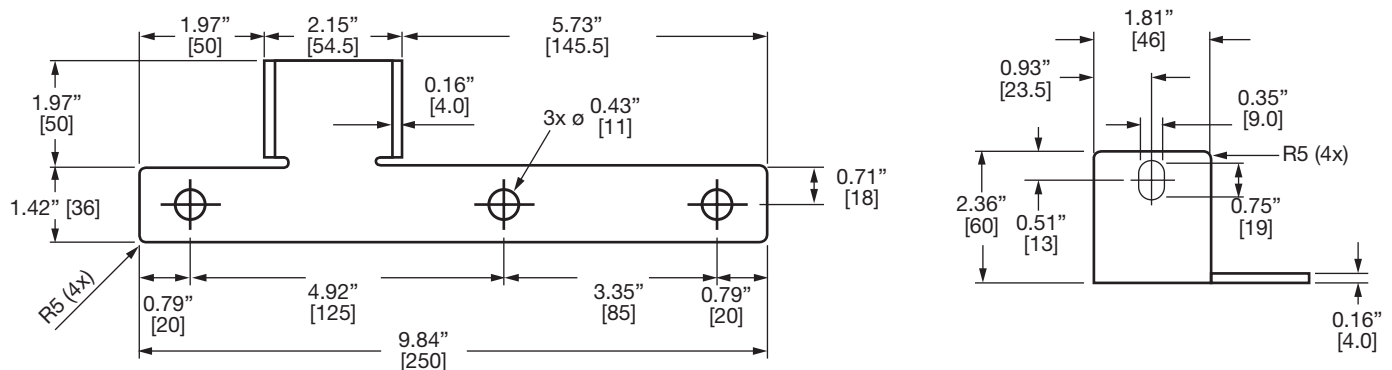
Dimensions ELH Size 9 - 11



Size	A (6.3cc)	A (14cc)	A (22cc)	B	C	D	E	F (6.3cc)	F (14cc)	F (22cc)	G	H	J
9	N/A	19.82 [503]	20.38 [518]	32.61 [828]	35.83 [910]	16.14 [410]	27.56 [700]	N/A	17.57 [446]	17.85 [453]	17.69 [449]	33.27 [845]	3.62 [92]
10	N/A	20.65 [525]	21.21 [539]	38.23 [971]	41.73 [1060]	18.11 [460]	27.56 [700]	N/A	18.39 [467]	18.67 [474]	20.84 [529]	39.37 [1000]	3.66 [93]
11	N/A	21.43 [544]	21.99 [559]	42.91 [1090]	46.46 [1180]	18.11 [460]	27.56 [700]	N/A	19.18 [487]	19.46 [494]	23.20 [589]	44.69 [1135]	3.66 [93]

Size	K	L	M	N	P	Q	U	V	W	X	Y	Z
9	1.77 [45]	N/A	N/A	3.35 [85]	SAE-10	SAE-4	1/2" NPT	35.43 [900]	47.24 [1200]	ø0.39x0.78 [ø10x20]	SAE-24	SAE-24
10	1.81 [46]	N/A	N/A	3.54 [90]	SAE-10	SAE-4	1/2" NPT	35.43 [900]	55.12 [1400]	ø0.35 [ø9]	SAE-24	SAE-24
11	1.81 [46]	N/A	N/A	2.95 [75]	SAE-10	SAE-4	1/2" NPT	39.37 [1000]	62.99 [1600]	ø0.35 [ø9]	SAE-24	SAE-24

Dimensions ELH Mounting Foot Bracket Size 2 - 4

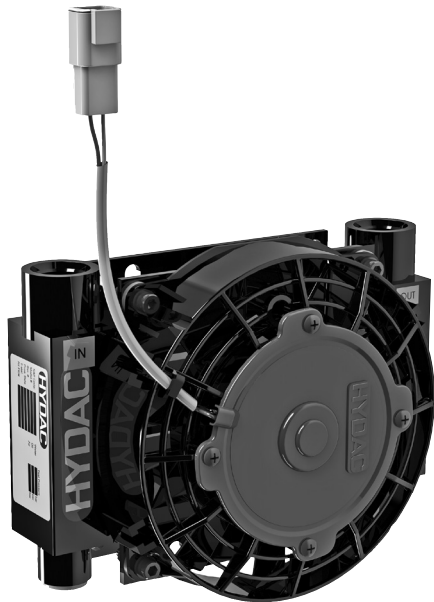


Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches [mm].

MOBILE COOLERS

ELX Series

DC Motor Drive



EXtreme

- Performance
- Value
- Durability
- Adaptability

Easy OEM Interchange Options



Features

These coolers use a combination of high performance cooling elements and long life DC electrical powered fans to give extended trouble free operation in mobile hydraulic applications. The compact design allows the coolers to fit most equipment and provides the highest cooling performance in heat dissipation while minimizing space required.

- OEM interchangeable - performance and dimensional
- Bar-and-plate brazed aluminum core
- 12V & 24V DC fan (brushless option available)
- Rugged, lightweight, compact
- Provides the best heat transfer per given envelope size while minimizing pressure drop
- Side welded aluminum fittings/ports and tanks ensure structural integrity
- Standard SAE O-ring boss ports
- High resistance to vibration and mechanical stress
- All coolers feature a built-in SAE O-ring boss thermostat port
- Available with internal pressure or thermal bypass

Applications



Agricultural



Municipal Vehicles



Construction



Railways



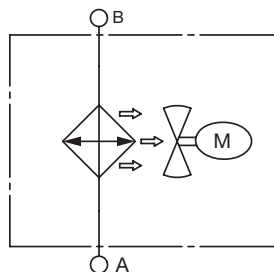
Forestry



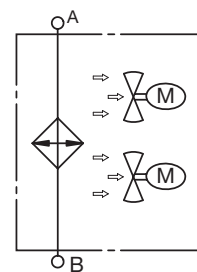
Cranes

Hydraulic Symbol

Single Fan



Dual Fan



Benefits

- Operates in challenging environments with IP 68 rating
- Up to 53 HP cooling capacity
- Rated flows up to 80 gpm
- Motor lifetimes up to 10,000 hours

General

Compatible Fluids	Mineral oil to DIN 51524 Part 1 and 2 Water-glycol (<i>contact factory for applications</i>)
Temperature	Max. Ambient: 120°F ; Max. Fluid: 266°F
Pressure	290 psi (16 bar) max. static pressure 230 psi (21 bar) max. dynamic pressure
Fan	Suction axial fan (<i>std</i>); Blower axial fan (<i>opt</i>) Note: cooling capacity reduced by 10% in "blower" configuration
Motor	12 VDC motor; 24 VDC motor Protection class IP68
Materials	Housing: welded steel Heat exchanger: aluminum, brazed bar-&-plate Fan: plastic
Connections	Electrical: Deutsch DTP04-2P Fluid: SAE O-ring boss

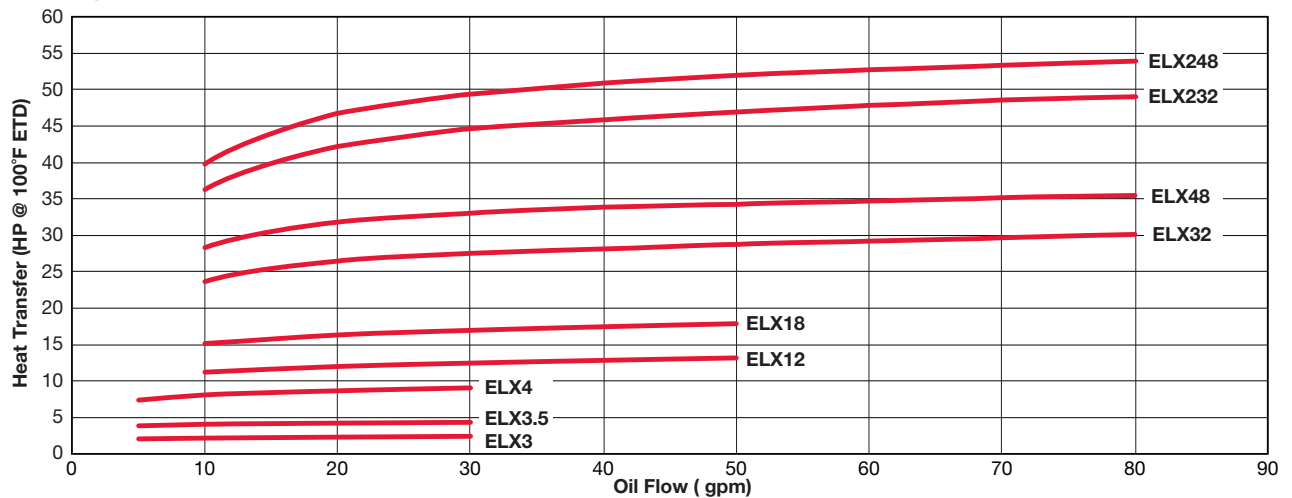
Preferred ELX Models	P/N
ELX 12 H 1.5 12 S SC	2957269
ELX 18 H 1.5 12 S SC	2957272
ELX 3 H 1.5 12 S SC	2957265
ELX 3.5 H 1.5 12 S SC	2957266
ELX 32 H 1.5 12 S SC	2957275
ELX 48 H 1.5 12 S SC	2957277
ELX 232 H 1.5 12 S SC	2957285
ELX 248 H 1.5 12 S SC	2957287

Model Code

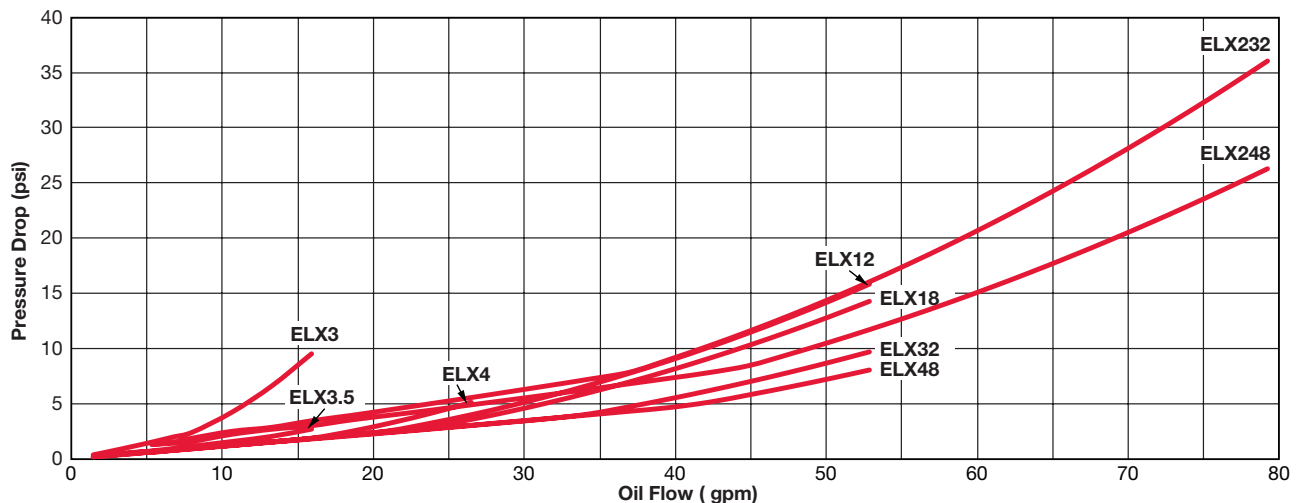
Model	ELX	3	H	1.5	12	S	IBT	45	2	TS120
Model										
ELX	= Air Cooled Oil Cooler with DC-Powered Fan									
Size	3, 3.5, 4, 8, 12, 14, 18, 20, 32, 48, 66, 82, 120, 232, 248									
Fan										
(omit)	= No Fan (all sizes)									
H	= Fan (sizes 3, 3.5, 4, 12, 18, 32, 48, 232, 248 only)									
Modification Number	(latest version always supplied)									
Fan Motor Voltage										
12	= 12 VDC									
24	= 24 VDC									
Air Flow Direction										
S	= Suction (through heat exchanger, exhausting through fan)									
B	= Blowing (through fan, exhausting through heat exchanger)									
Accessories										
(omit)	= None									
IBT	= Internal Thermostatic Bypass Valve									
IBP	= Internal Pressure Bypass Valve									
Opening Temperature (IBT Only)										
45	= 113°F (45°C) (closes at 131°F)									
60	= 140°F (60°C) (closes at 158°F)									
Opening Pressure Drop (IBT & IBP Only)										
2	= 2 bar (29 psi)									
3	= 3 bar (45 psi)									
4	= 4 bar (58 psi)									
Temperature Switch										
(omit)	= None									
TS-120	= Inline Temperature Switch, Fixed 120°F									
TS-140	= Inline Temperature Switch, Fixed 140°F									

Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Heat Dissipation, Models with DC Fans



Pressure Drop

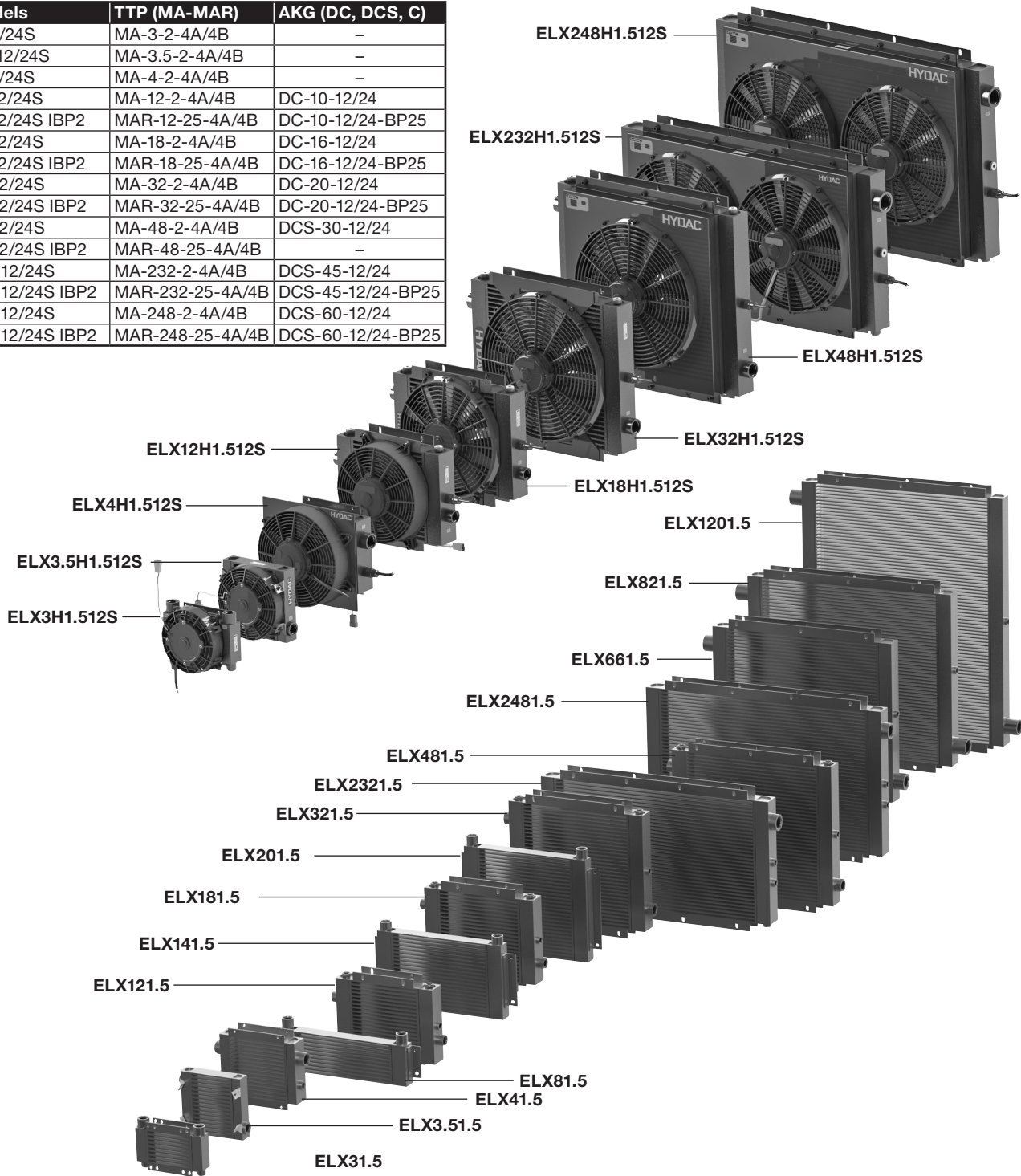


MOBILE COOLERS

ELX Visual Interchange Guide

Models with Fans

HYDAC Models	TTP (MA-MAR)	AKG (DC, DCS, C)
ELX3H1.5 12/24S	MA-3-2-4A/4B	–
ELX3.5H1.5 12/24S	MA-3.5-2-4A/4B	–
ELX4H1.5 12/24S	MA-4-2-4A/4B	–
ELX12H1.5 12/24S	MA-12-2-4A/4B	DC-10-12/24
ELX12H1.5 12/24S IBP2	MAR-12-25-4A/4B	DC-10-12/24-BP25
ELX18H1.5 12/24S	MA-18-2-4A/4B	DC-16-12/24
ELX18H1.5 12/24S IBP2	MAR-18-25-4A/4B	DC-16-12/24-BP25
ELX32H1.5 12/24S	MA-32-2-4A/4B	DC-20-12/24
ELX32H1.5 12/24S IBP2	MAR-32-25-4A/4B	DC-20-12/24-BP25
ELX48H1.5 12/24S	MA-48-2-4A/4B	DCS-30-12/24
ELX48H1.5 12/24S IBP2	MAR-48-25-4A/4B	–
ELX232H1.5 12/24S	MA-232-2-4A/4B	DCS-45-12/24
ELX232H1.5 12/24S IBP2	MAR-232-25-4A/4B	DCS-45-12/24-BP25
ELX248H1.5 12/24S	MA-248-2-4A/4B	DCS-60-12/24
ELX248H1.5 12/24S IBP2	MAR-248-25-4A/4B	DCS-60-12/24-BP25



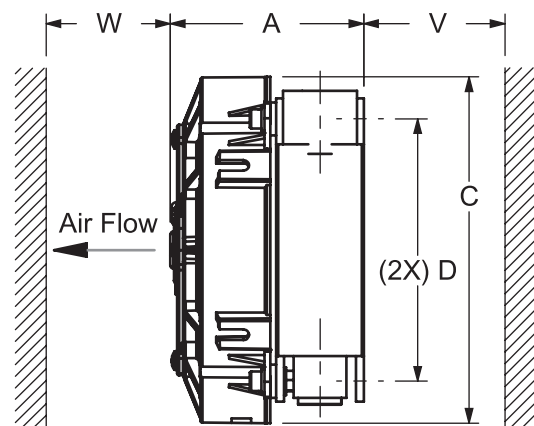
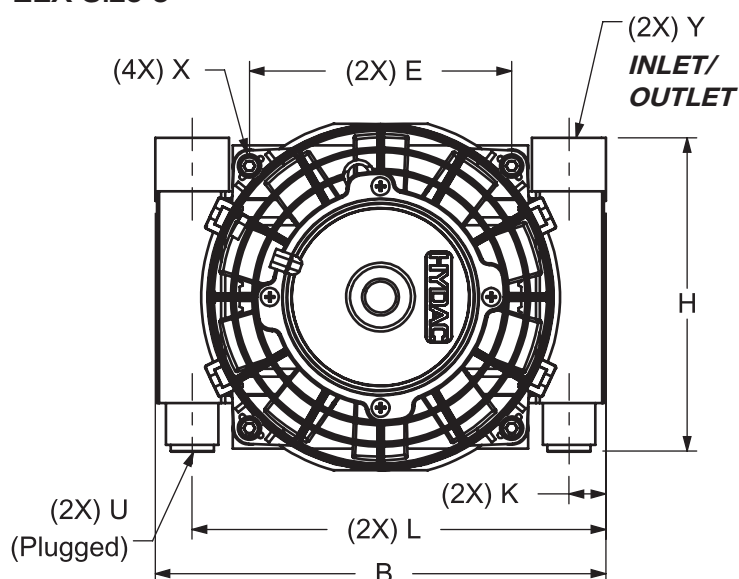
Models without Fans

HYDAC Models	TTP (MA-MAR)	AKG (DC, DCS, C)
ELX31.5	MA-3-2	–
ELX3.51.5	MA-3.5-2	–
ELX41.5	MA-4-2	–
ELX81.5	MA-8-2	C-8
ELX121.5	MA-12-2	C-12
ELX121.5 IBP2	MAR-12-25-4A/4B	C-12-BP25
ELX141.5	MA-14-2	C-14
ELX181.5	MA-18-2	C-18
ELX181.5 IBP2	MAR-18-25-4A/4B	C-18-BP25
ELX201.5	MA-20-2	C-20
ELX321.5	MA-32-2	C-32
ELX321.5 IBP2	MAR-32-25-4A/4B	C-32-BP25

HYDAC Models	TTP (MA-MAR)	AKG (DC, DCS, C)
ELX481.5	MA-48-2	C-48
ELX481.5 IBP2	MAR-48-25-4A/4B	C-48-BP25
ELX661.5	MA-66-2	C-66
ELX661.5 IBP2	MAR-66-25-4A/4B	C-66-BP25
ELX821.5	MA-82-2	C-82
ELX821.5 IBP2	MAR-82-25-4A/4B	C-82-BP25
ELX1201.5	MA-120-2	C-120
ELX1201.5 IBP2	MAR-120-25-4A/4B	C-120-BP25
ELX2321.5	MA-232-2	–
ELX2321.5 IBP2	MAR-232-25-4A/4B	–
ELX2481.5	MA-248-2	–
ELX2481.5 IBP2	MAR-248-25-4A/4B	–

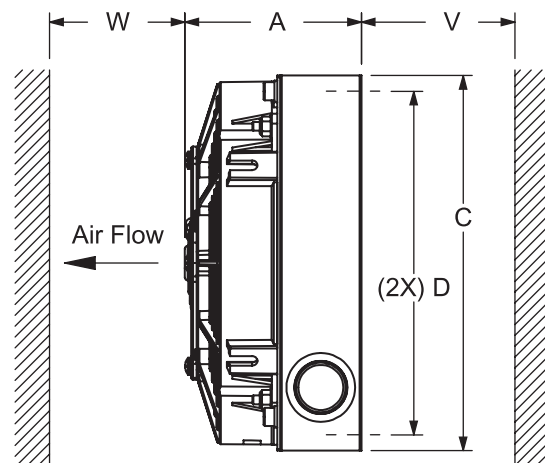
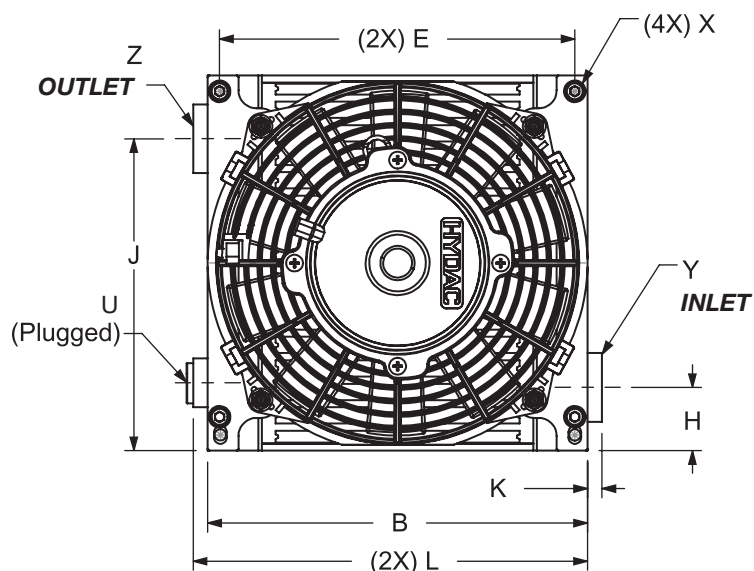
Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Dimensions ELX Size 3



Size	A	B	C	D	E	F	H
3H	3.92 [100]	9.13 [232]	7.02 [178]	5.31 [135]	5.31 [135]	N/A	6.35 [161]
Size	J	K	L	U	V	W	Y/Z
3H	N/A	0.75 [19]	8.39 [213]	SAE-8	3.94 [100]	7.84 [200]	SAE-12

Dimensions ELX Size 3.5

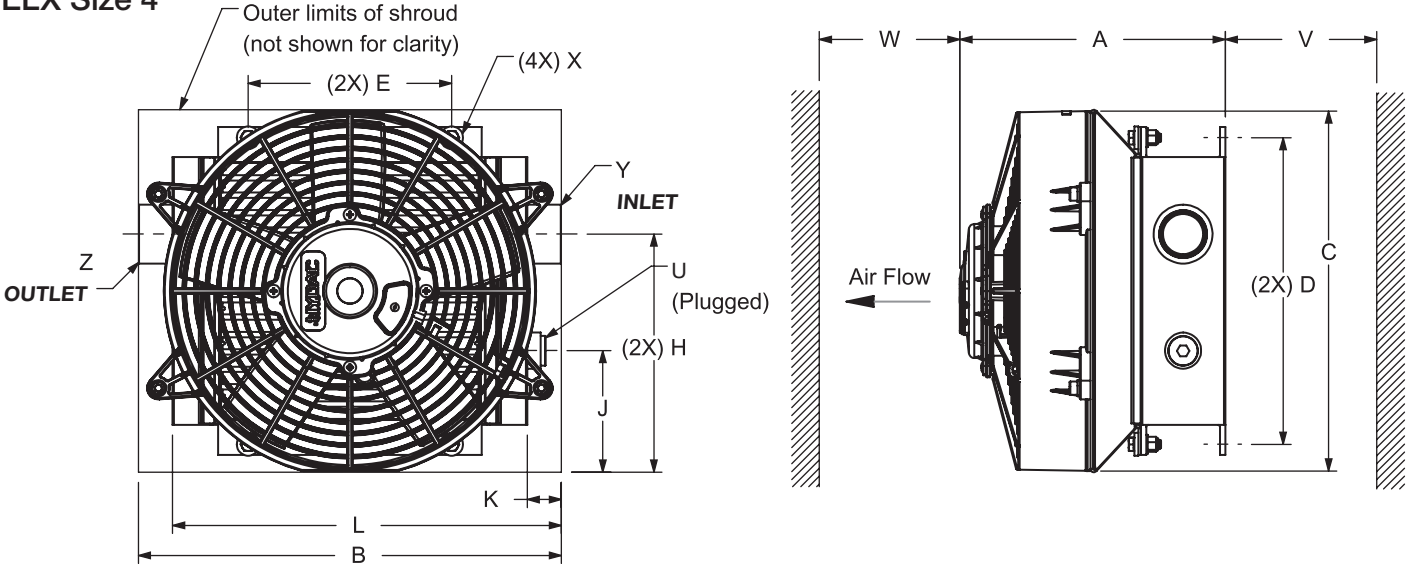


Size	A	B	C	D	E	F	H
3.5 H	3.84 [98]	8.27 [210]	8.17 [208]	7.48 [190]	7.73 [196]	N/A	1.38 [35]
Size	J	K	L	U	V	W	Y/Z
3.5 H	6.79 [173]	0.31 [8]	8.72 [222]	SAE-8	3.94 [100]	7.84 [200]	SAE-12

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

MOBILE COOLERS

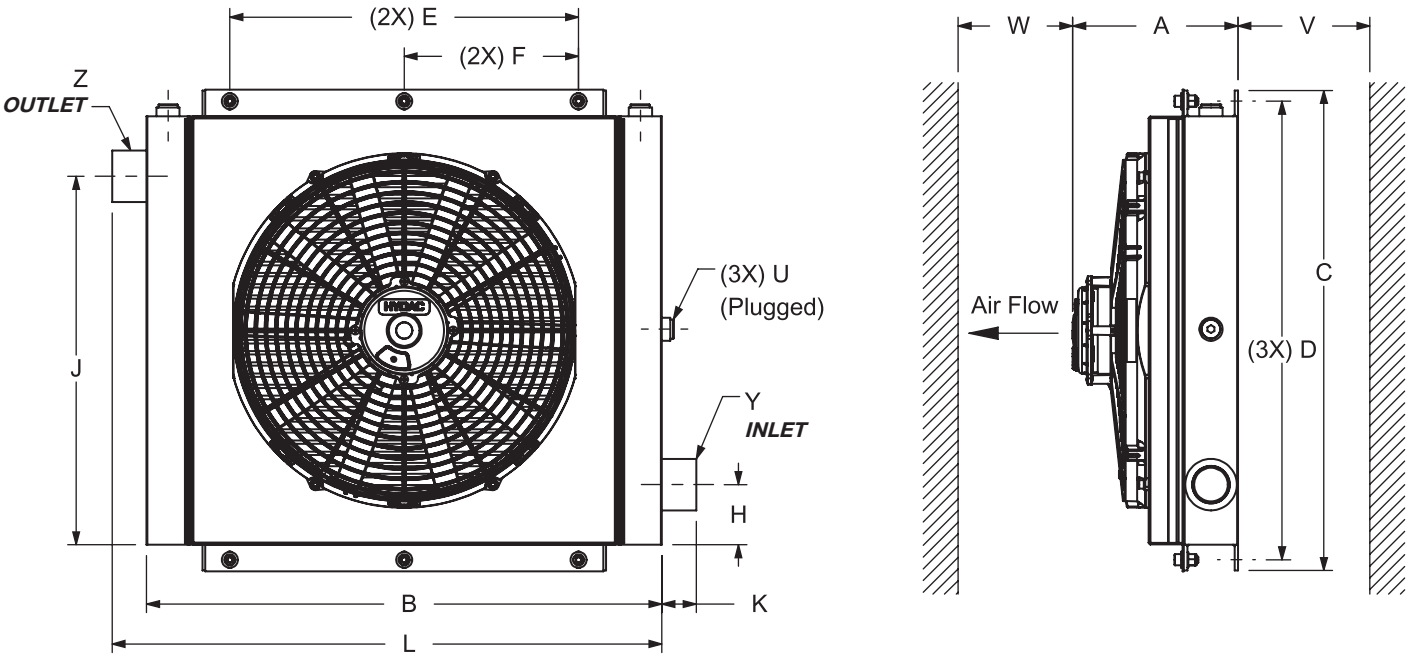
Dimensions ELX Size 4



Size	A	B	C	D	E	F	H
4 H	7.80 [198]	12.44 [316]	10.59 [269]	9.02 [229]	5.98 [152]	N/A	7.00 [178]

Size	J	K	L	U	V	W	Y/Z
4H	3.58 [91]	1.00 [25]	11.43 [290]	SAE-8	5.12 [130]	10.24 [260]	SAE-16

Dimensions ELX Size 12 - 48



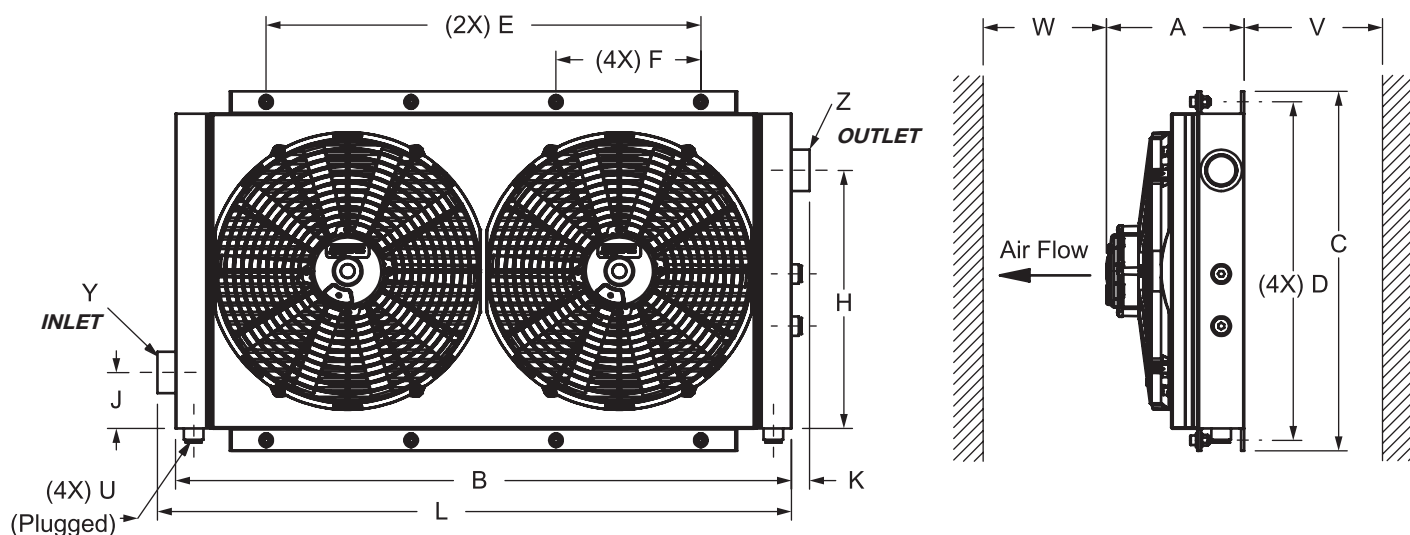
Size	A	B	C	D	E	F	H
12 H	6.38 [162]	13.78 [350]	12.13 [308]	11.06 [281]	5.71 [145]	N/A	3.03 [77]
18 H	5.03 [128]	15.75 [400]	13.82 [351]	12.83 [326]	5.87 [149]	N/A	2.72 [69]
32 H	6.06 [154]	19.69 [500]	18.46 [469]	17.32 [440]	12.00 [305]	N/A	2.85 [72]
48 H	7.58 [192]	23.62 [600]	22.00 [559]	21.02 [534]	15.98 [406]	8.00 [203]	2.76 [70]

Size	J	K	L	U	V	W	Y/Z
12 H	6.89 [175]	1.00 [25]	14.76 [375]	SAE-8	5.12 [130]	10.24 [260]	SAE-12
18 H	8.74 [222]	1.00 [25]	16.73 [425]	SAE-8	5.91 [150]	11.81 [300]	SAE-12
32 H	13.21 [336]	1.57 [40]	21.26 [540]	SAE-8	7.87 [200]	15.75 [400]	SAE-20
48 H	16.89 [429]	1.57 [40]	25.20 [640]	SAE-8	7.87 [200]	15.75 [400]	SAE-20

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

Dimensions

ELX Size 232 - 248



Size	A	B	C	D	E	F	H
232 H	7.48 [190]	33.46 [850]	19.53 [496]	18.39 [467]	23.62 [600]	7.87 [200]	14.02 [356]
248 H	7.48 [190]	35.43 [900]	23.23 [590]	22.20 [564]	26.57 [675]	8.86 [225]	17.70 [450]

Size	J	K	L	U	V	W	Y/Z
232 H	3.03 [77]	1.00 [25]	34.45 [875]	SAE-8	6.89 [175]	13.78 [350]	SAE-20
248 H	2.74 [70]	1.00 [25]	36.42 [925]	SAE-8	6.89 [175]	13.78 [350]	SAE-20

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

Notes



C Air Cooled Oil Coolers for Industrial Applications

These coolers use a combination of high performance cooling elements, and long life AC fan drives to give extended, trouble-free operation in the most demanding of industrial cooling applications. Available with radial, or axial air flow; e-fans or industry standard NEMA motors; single-phase, or three-phase power. There is a product available for every application.

AC E-Fans



Model Code

		OKC	1H	1.5	115	S	X	X	X	X
Model	_____									
OKC	= Air Cooled Oil Cooler with AC Motor Drive									
Size	_____									
0H, 1H, 2H, 3H, 4S, 5S, 6H, 7S										
(Note: H = 3600 RPM, S = 1800 RPM)										
Version Number	_____									
Motor Drive Voltage	_____									
115	= 115 Volts 50/60 Hz, 1ph									
230	= 230 Volts 50/60 Hz, 1ph									
480	= 480 Volts 60 Hz, 3ph									
Air Flow Direction	_____									
S	= Suction (through heat exchanger, exhausting through fan)									
Accessories	_____									
IBT	= Internal Temperature Bypass Valve									
IBP	= Internal Pressure Bypass Valve									
Opening Temperature (IBT only)	_____									
45	= 113°F (45°C) (closes at 131°F)									
50	= 130°F (50°C) (closes at 150°F)									
60	= 140°F (60°C) (closes at 158°F)									
Opening Pressure (IBT & IBP)	_____									
2	= 29 psi (2 bar)									
3	= 45 psi (3 bar)									
4	= 58 psi (4 bar)									
Temperature Switch	_____									
(omit)	= None									
TS-120	= Inline Switch, Fixed 120°F									
TS-140	= Inline Switch, Fixed 140°F									
TS-160	= Inline Switch, Fixed 160°F									

Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Preferred OKC Models	P/N
OKC1H1.5115S QS	2594668
OKC1H1.5480S SC	2592532
OKC2H1.5115S QS	2594560
OKC2H1.5480S SC	2592534
OKC3H1.5480S SC	2592536
OKC4S1.5115S QS	2594336
OKC4S1.5480S SC	2592538
OKC5S1.5230S SC	2592539
OKC6H1.5480S SC	2592542
OKC7S1.5480S SC	2592544

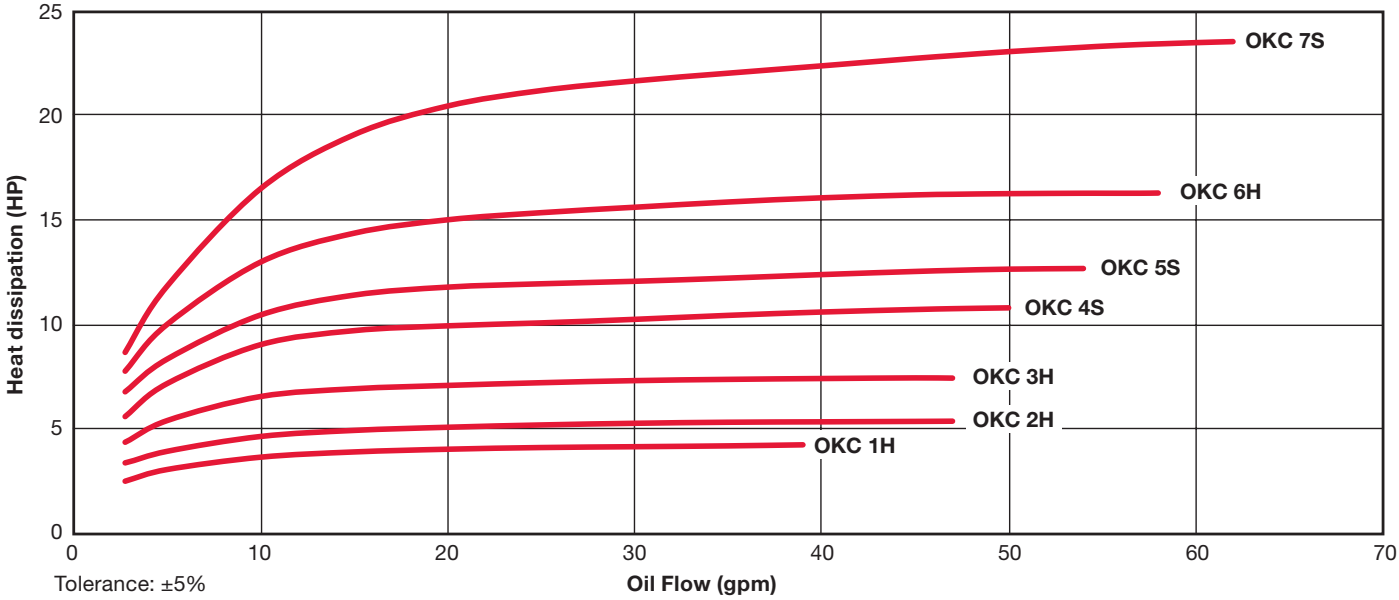
Technical Specifications

Size	Current Draw (amps) 115V / 230V / 480V	Speed @ 60Hz (rpm) 115V / 230V / 480V	Fan Diameter (mm) / (in)	Noise Level dBa* (1 Meter)	Weight (lbs.)
OKC 1H	1.1 / 0.54 / 0.34	3000 / 3000 / 2990	230 / 9.1	71	20
OKC 2H	1.1 / 0.5 / 0.37	3000 / 3100 / 2900	230 / 9.1 (115V)	71	27
			250 / 9.8 (230/460V)		
OKC 3H	1.55 / 0.75 / 0.56	2900 / 2640 / 2320	300 / 11.8	75	32
OKC 4S	2.2 / 0.92 / 0.4	1650 / 1600 / 1600	400 / 15.8	69	47
OKC 5S	1.1 / 0.92 / 0.4	1650 / 1600 / 1600	400 / 15.8	72	62
OKC 6H	1.1 / 0.75 / 0.56	2900 / 2640 / 2320	300 / 11.8	75	86
OKC 7S	2.2 / 0.92 / 0.4	1650 / 1600 / 1600	400 / 15.8	71	99

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

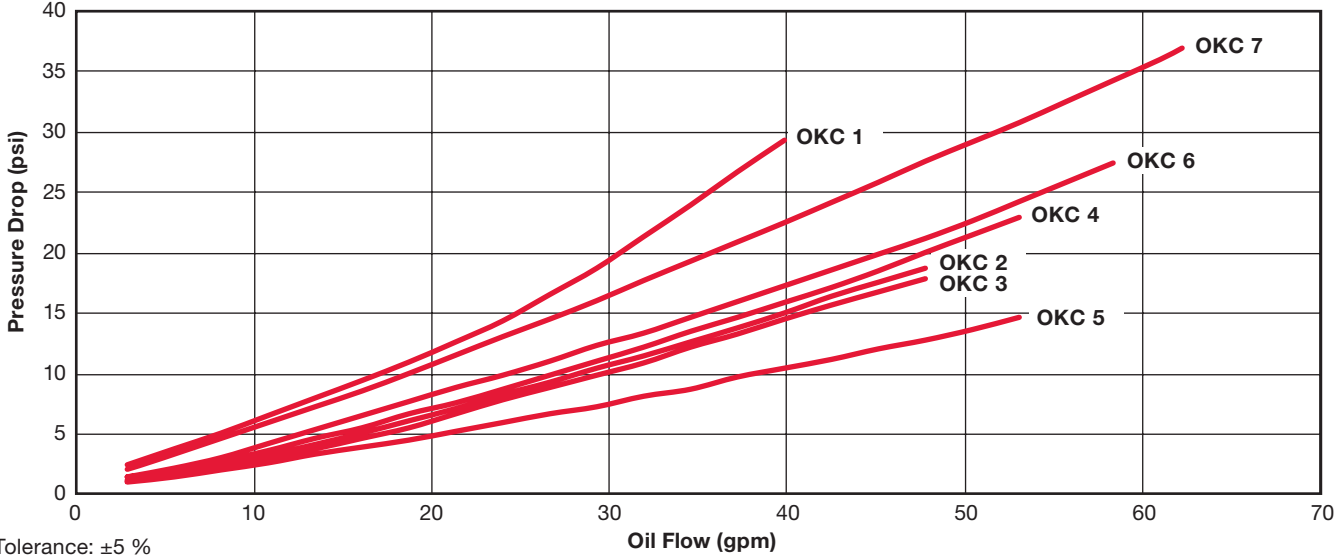
INDUSTRIAL COOLERS

Heat Dissipation @ $\Delta T = 40^{\circ}F$



Cooling capacity is dependent on the oil flow rate and the temperature difference ΔT between oil inlet and air inlet.

Pressure Drop @ 30cSt

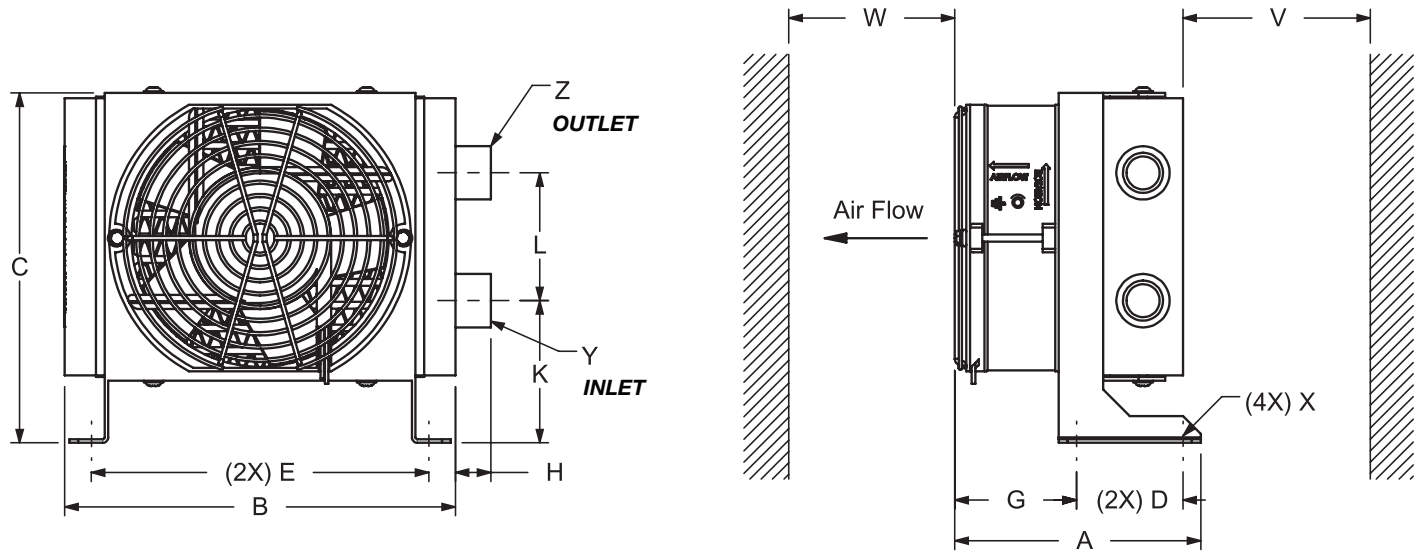


Pressure differential Δp depending on flow rate Q and the viscosity of the oil. For other viscosities the result must be multiplied by the K factors below.

K Factor Chart

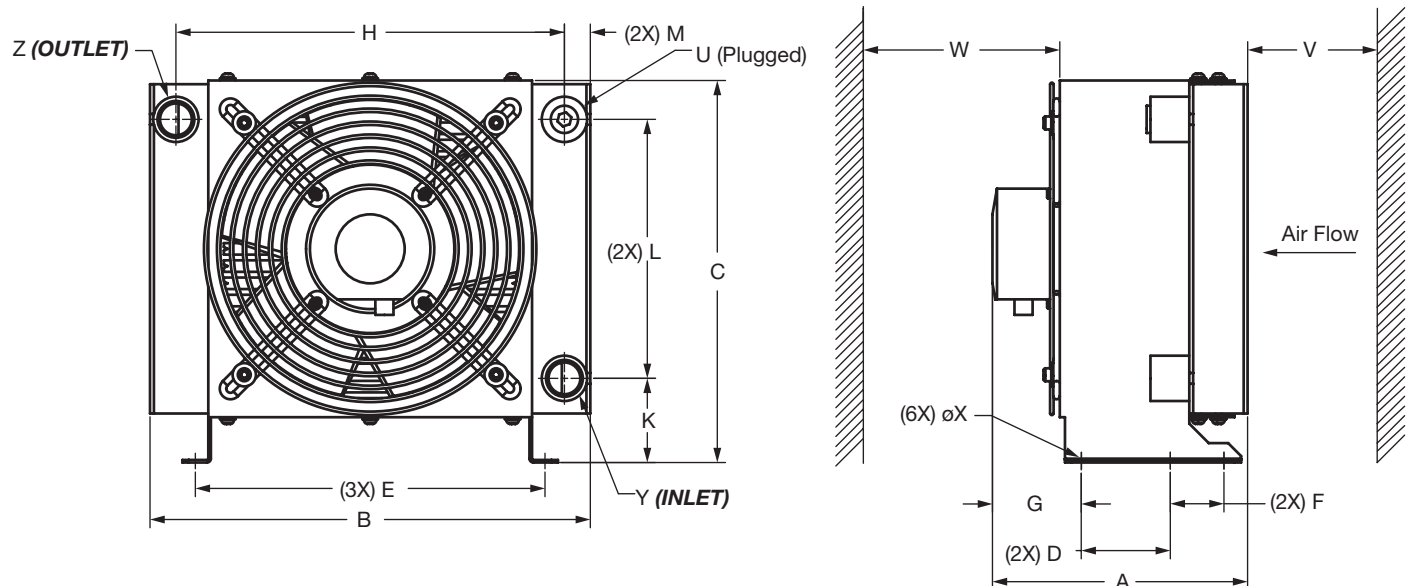
K Factor	0.5	0.65	0.77	1	1.3	1.52	1.9	2.8	5.3
Viscosity (SSU)	46	70	102	150	213	250	315	464	695
Viscosity (cSt)	10	15	22	32	46	54	68	100	150

Dimensions OKC Size 0



Size	A	B	C	D	E	F	G	H	K	L	M	V	W	U	X	Y	Z
0	5.31 [135]	8.66 [220]	7.87 [200]	2.36 [60]	7.48 [190]	N/A	3.15 [80]	9.45 [240]	3.11 [79]	2.83 [72]	N/A	3.94 [100]	3.94 [100]	N/A	ø0.28 [ø7]	G 1/2"	G 1/2"

Dimensions OKC Size 1

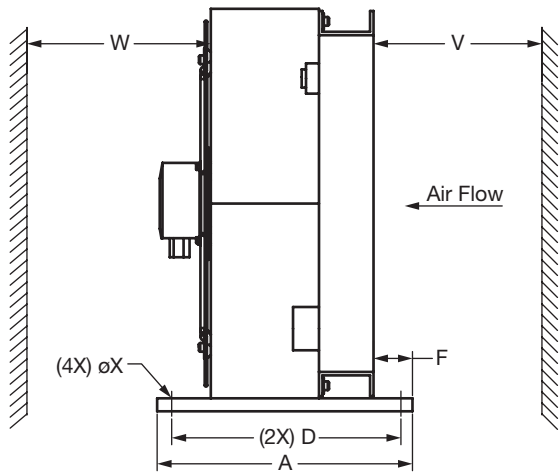
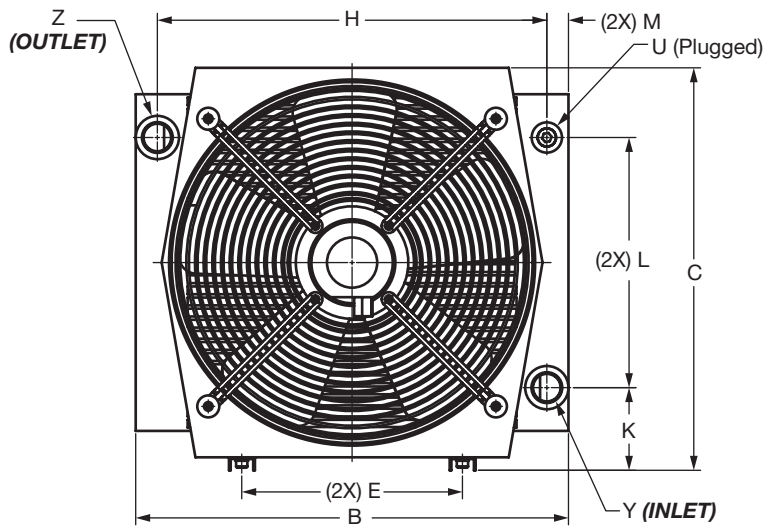


Size	A	B	C	D	E	F	G	H	K	L	M	V	W	U	X	Y	Z
1	7.76 [197]	13.39 [340]	11.61 [295]	1.97 [50]	10.63 [270]	2.36 [60]	2.64 [67]	11.81 [300]	2.56 [65]	7.87 [200]	0.79 [20]	2.76 [70]	7.87 [200]	1/2" NPT	ø0.33 [ø8]	SAE-12	SAE-12

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

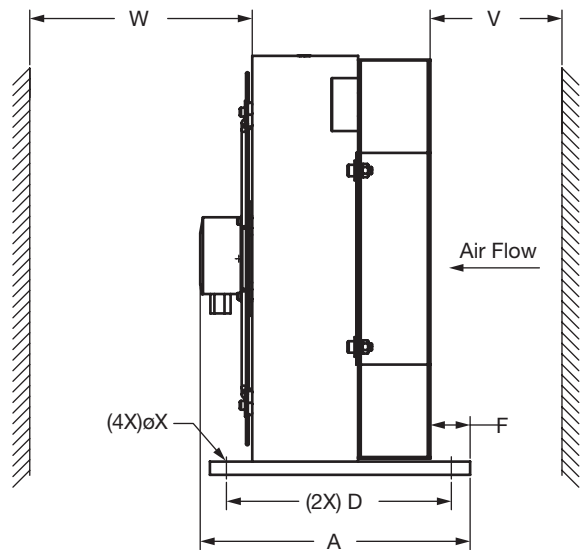
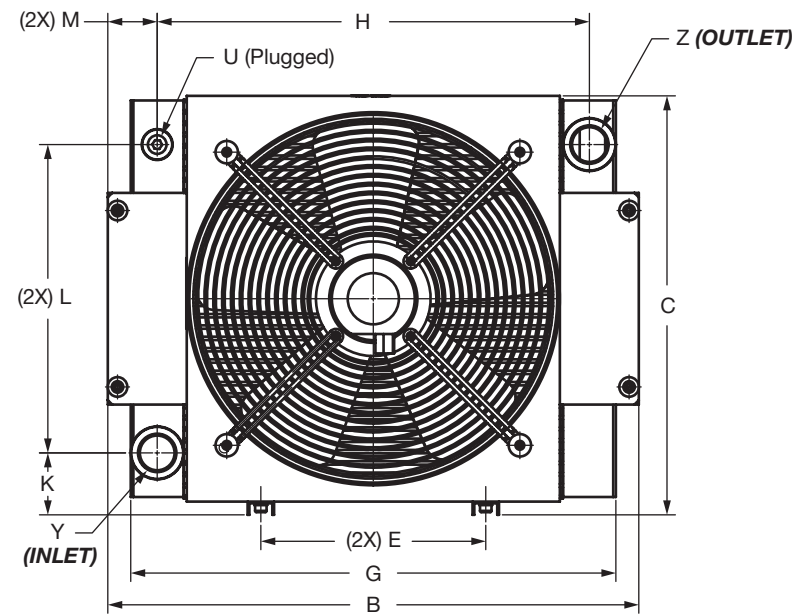
INDUSTRIAL COOLERS

Dimensions OKC Size 2 - 4



Size	A	B	C	D	E	F	G	H	K	L	M	V	W	U	X	Y	Z
2	11.61 [295]	15.12 [384]	12.91 [328]	10.04 [255]	6.30 [160]	2.95 [75]	N/A	12.76 [324]	2.76 [70]	7.87 [200]	1.18 [30]	5.91 [150]	9.84 [250]	1/2" NPT	ø0.35 [ø9]	SAE-16	SAE-16
3	11.61 [295]	16.54 [420]	14.61 [371]	10.04 [255]	9.54 [242]	2.17 [55]	N/A	14.57 [370]	3.09 [78]	9.06 [230]	0.98 [25]	7.09 [180]	11.81 [300]	1/2" NPT	ø0.35 [ø9]	SAE-16	SAE-16
4	11.61 [295]	19.69 [500]	18.31 [465]	10.04 [255]	10.04 [255]	1.77 [45]	N/A	17.72 [450]	3.76 [95]	11.39 [289]	0.98 [25]	7.87 [200]	15.75 [400]	1/2" NPT	ø0.35 [ø9]	SAE-16	SAE-16

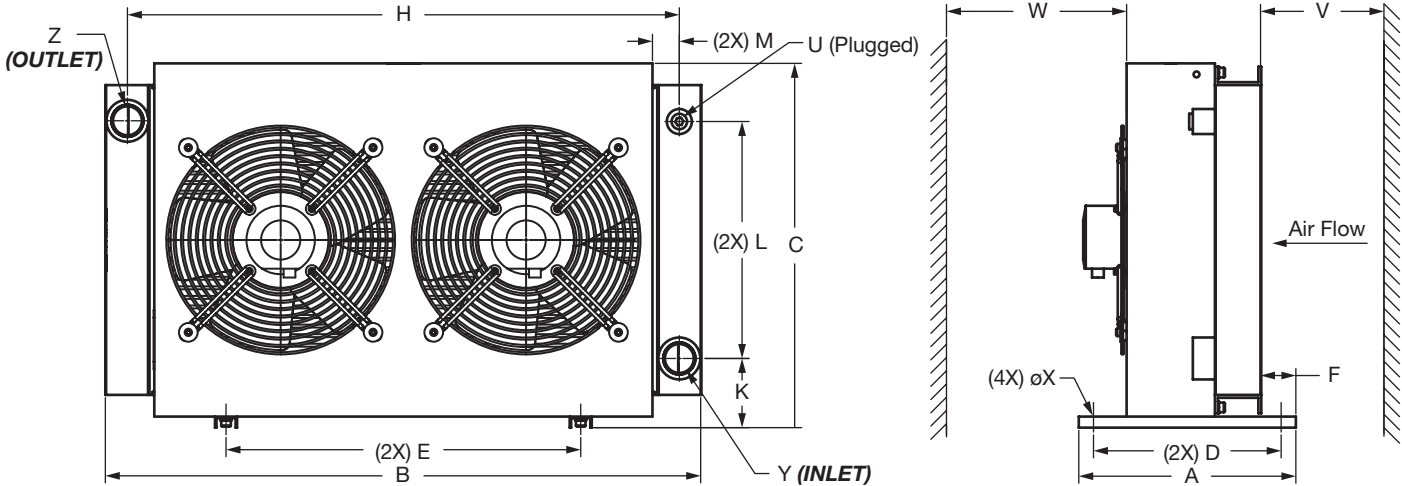
Dimensions OKC Size 5



Size	A	B	C	D	E	F	G	H	K	L	M	V	W	U	X	Y	Z
5	12.05 [306]	23.70 [602]	18.70 [475]	10.04 [255]	10.04 [255]	N/A	21.65 [550]	19.30 [490]	2.76 [70]	13.76 [350]	2.20 [56]	N/A	N/A	1/2" NPT	ø0.35 [ø9]	SAE-20	SAE-20

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

Dimensions
OKC Size 6 - 7



Size	A	B	C	D	E	F	G	H	K	L	M	V	W	U	X	Y	Z
6	11.61 [295]	31.89 [810]	19.49 [495]	10.04 [255]	18.98 [482]	1.85 [47]	N/A	29.53 [750]	3.70 [94]	12.68 [322]	1.18 [30]	7.78 [198]	15.75 [400]	1/2" NPT	ø0.35 [ø9]	SAE-20	SAE-20
7	11.61 [295]	37.40 [950]	21.54 [547]	10.04 [255]	18.98 [482]	1.85 [47]	N/A	35.04 [890]	3.70 [94]	14.69 [373]	1.18 [30]	9.84 [250]	19.80 [503]	1/2" NPT	ø0.35 [ø9]	SAE-20	SAE-20

INDUSTRIAL COOLERS

OK Series - AC Motor Drive

Air Cooled Oil Coolers



Features

The OK Series cooler design uses an axial fan assembly which draws air through the cooler. This offers excellent cooling capacity.

- Up to 50 HP cooling capacity
- Highly efficient and rugged bar-and plate style heat exchangers
- Externally mounted heat exchangers for easy maintenance and cleaning
- Modular pump and filter options for a plug and play fluid conditioning system
- Available with HYDAC MF, LPF and FLND series filters
- Accessories include: Thermostats (*adjustable and fixed*), Integrated Thermostatic bypass valves and pressure bypass valves.
- Packaged systems with pump flows ranging from 8.45 gpm to 47.5 gpm

Applications



Gearboxes



Industrial



Elevators



Power Generation



Pulp & Paper



Railways



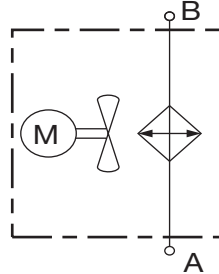
Shipbuilding



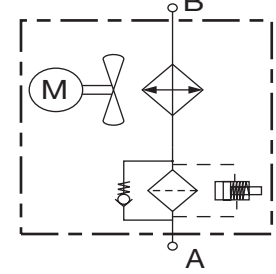
Steel / Heavy Industry

Hydraulic Symbol

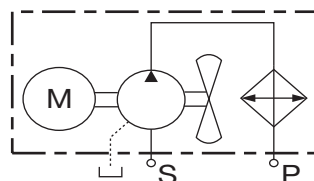
OK Sizes 2 - 7



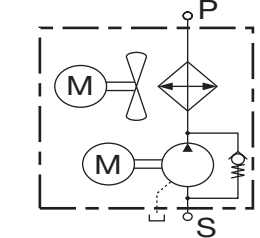
OKF Sizes 3 - 7



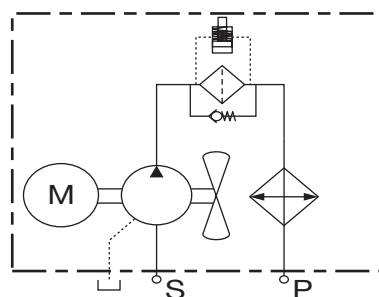
OKA Sizes 4 - 6



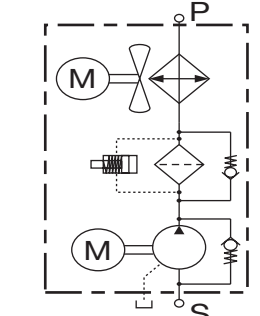
OKA Size 7



OKAF Sizes 4 - 6



OKAF Size 7



General

Materials	Housing: Welded Steel Heat Exchanger: Aluminum Heavy Duty Bar and Plate Fan: Plastic Motor: TEFC, NEMA or IEC frame <i>(varies by cooler size)</i> Pump: Screw
Mounting Orientation	Horizontal, motor shaft
Maximum Pressure	230 psi (16 Bar)
Fluids	Mineral oil to DIN 51524 Part 1 and 2
Ambient Temperature	50° – 104°F (10° – 40°C) <i>(Contact factory for other fluid usages)</i>
Maximum Oil Viscosity	w/o pump: 2000 cSt w/ pump: 180 cSt
Maximum Oil Temperature	w/o pump: 266°F (130°C) w/ pump: 176°F (80°C)
Standard Air Flow Direction	Air pulled across heat exchanger
Filtration	ISO/DIS 4406 Code 19/16- Filtration Grade B25>75

*Note: Sizes OKA-4-6 do not include relief valve. Pressures higher than 90 psi *(measured at pump outlet)* will result in motor overload conditions.
Size OKA-7 comes with a 145 psi relief valve built into the pump.

Technical Specifications

Model	Set up	Max. Oil Flow Rate (gpm)	Pump Displacement - Flow Rate	Noise (dBa @ 1 m)	Motor Specifications		
					Fan (HP)	Pump (HP)	RPM
OK 2S	Fan	40	N/A	64	0.21 (kW)	N/A	1800
OK 2H	Fan	40		80	0.29 (kW)		3600
OK 3S, OKF 3S	Fan	40		66	0.21 (kW)		1800
OK 3H, OKF 3H	Fan	40		85	0.63 (kW)		3600
OK 4L, OKF 4L	Fan	40		63	0.33		1200
OKA 4L, OKAF 4L	Fan w/pump	N/A	28 cc/rev 8.45 gpm 40 cc/rev 12 gpm	68	N/A	2	1200
OK 4S, OKF 4S	Fan	40	N/A	72	0.5	N/A	1800
OKA 4S, OKAF 4S	Fan w/pump	N/A	28 cc/rev 12.75 gpm 40 cc/rev 18.5 gpm	75	N/A	3	1800
OK 5L, OKF 5L	Fan	60	N/A	72	0.33	N/A	1200
OKA 5L, OKAF 5L	Fan w/pump	N/A	28 cc/rev 8.45 gpm 40 cc/rev 12 gpm	75	N/A	2	1200
OK 5S, OKF 5S	Fan	60	N/A	79	1.5	N/A	1800
OKA 5S, OKAF 5S	Fan w/pump	N/A	28 cc/rev 12.75 gpm 40 cc/rev 18.5 gpm	81	N/A	3	1800
OK 6L, OKF 6L	Fan	60	N/A	72	0.75	N/A	1200
OKA 6L, OKAF 6L	Fan w/pump	N/A	28 cc/rev 8.45 gpm 40 cc/rev 12 gpm	77	N/A	2	1200
OK 6S, OKF 6S	Fan	60	N/A	79	1.5	N/A	1800
OKA 6S, OKAF 6S	Fan w/pump	N/A	28 cc/rev 12.75 gpm 40 cc/rev 18.5 gpm	82	N/A	3	1800
OK 7L, OKF 7L	Fan	74	N/A	80	2	N/A	1200
OKA 7L, OKAF 7L	Fan w/pump	N/A	70 cc/rev 34.3 gpm 100 cc/rev 47.5 gpm	84	2	5 (70cc/rev) 7.5 (100 cc/rev)	1200 / 1800
OK 7S, OKF 7S	Fan	74	N/A	85	5	N/A	1800
OKA 7S, OKAF 7S	Fan w/pump	N/A	70 cc/rev 34.3 gpm 100 cc/rev 47.5 gpm	87	5	5 (70cc/rev) 7.5 (100 cc/rev)	1800 / 1800

INDUSTRIAL COOLERS

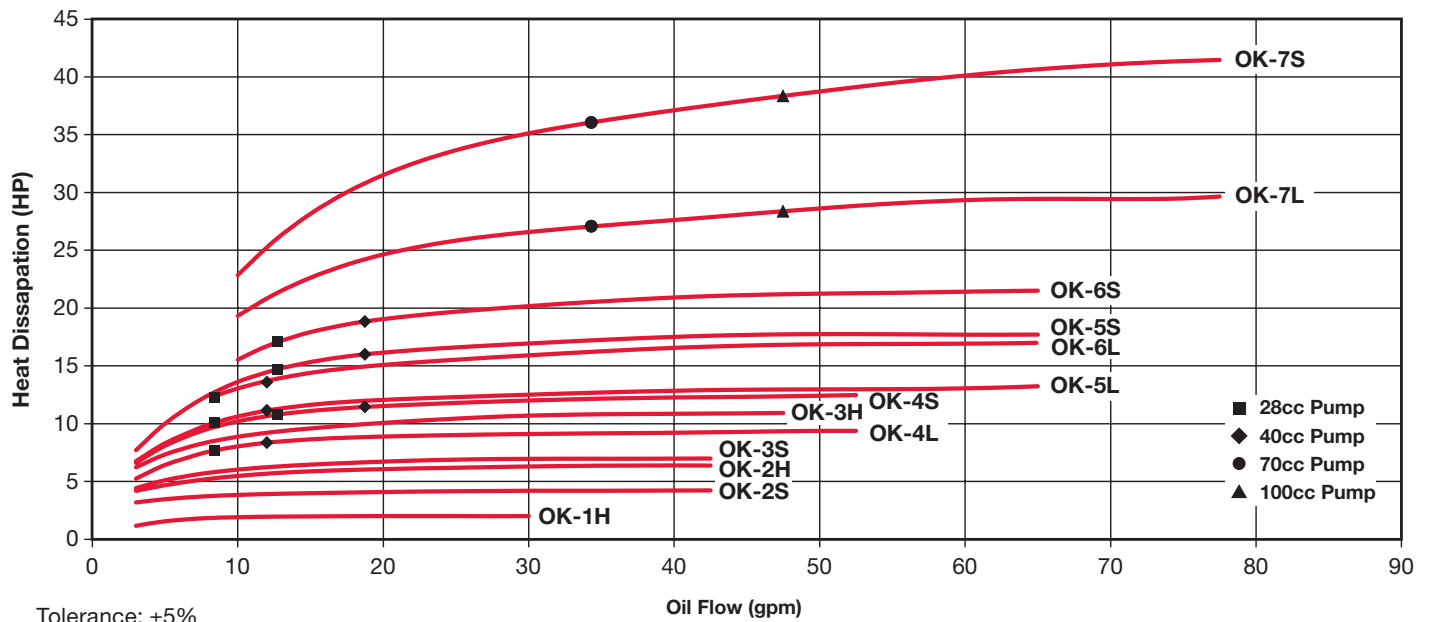
Model Code

	OKA	4L	3.6	B	28	MF95	3	B	IBP	2	TS120
Model											
OK	= Basic Cooler										
OKF	= Cooler with Filter (Sizes 3-7 only)										
OKA	= Cooler with Pump (Sizes 4-7 only)										
OKAF	= Cooler with Pump & Filter (Sizes 4-7 only)										
Size											
2H, 2S, 3H, 3S, 4L, 4S, 5L, 5S, 6L, 6S, 7L, 7S											
(Note: H = 3600 RPM, S = 1800 RPM, L = 1200 RPM)											
Modification Number (latest version supplied)											
Motor Voltage											
B	= 230/460 Volts, 3ph										
C	= 575 Volts, 3ph										
X	= No Motor										
Pump											
(omit)	= No Pump										
28	= 28 ccm/rev, L=8.4 gpm, S=12.75 gpm (sizes 4L, 4S, 5L, 5S, 6L, 6S only)										
40	= 40 ccm/rev, L=12 gpm, S=18.5 gpm (sizes 4L, 4S, 5L, 5S, 6L, 6S only)										
70	= 70 ccm/rev, L/S=34.3 gpm (sizes 7L & 7S only)										
100	= 100 ccm/rev, L/S=47.5 gpm (sizes 7L & 7S only)										
Filter Type											
(omit)	= No Filter										
MF95	= Spin-On 25 rated gpm										
MF190	= Spin-On 30 rated gpm										
MF195	= Spin-On 60 rated gpm										
LPF160	= Cartridge Filter 43 rated gpm										
LPF240	= Cartridge Filter 63 rated gpm										
LPF280	= Cartridge Filter 73 rated gpm										
FLND250	= Duplex Filter 66 rated gpm (sizes 4-7 only)										
FLND400	= Duplex Filter 105 rated gpm (size 7 only)										
Micron Rating											
(omit)	= No Filter										
3	= 3 micron, Absolute										
5	= 5 micron, Absolute (MF, LPF only)										
6	= 6 micron, Absolute (FLND only)										
10	= 10 micron, Absolute										
20	= 20 micron, Absolute (MF, LPF only)										
25	= 25 micron, Absolute (FLND only)										
Filter Indicator											
(omit)	= No Filter										
B	= Visual										
C	= Electrical (AC/DC) (LPF + FLND filters only)										
D24	= 24 VDC Lamp/Switch (LPF + FLND filters only)										
D115	= 115 VAC Lamp/Switch (LPF + FLND filters only)										
D230	= 230 VAC Lamp/Switch (LPF + FLND filters only)										
Accessories											
(omit)	= None										
IBT	= Internal Temperature Bypass Valve										
IBP	= Internal Pressure Bypass Valve										
Opening Temperature (IBT Only)											
45	= Opens 113°F (45°C) Closes at 131°F (55°C)										
50	= Opens 130°F (50°C) Closes at 150°F (65°C)										
60	= Opens 140°F (60°C) Closes at 158°F (70°C)										
Opening Pressure (IBT & IBP)											
2	= 2 bar (29 psi)										
3	= 3 bar (45 psi)										
4	= 4 bar (58 psi) (IBP only)										
Temperature Switch											
TR1	= Reservoir Thermostat, adjustable 32° to 200°F (must be ordered as a separate line item)										
AITR	= Inline Thermostat, adjustable 32°F to 200°F										
TS-120	= Inline Temperature Switch, Fixed 120°F										
TS-140	= Inline Temperature Switch, Fixed 140°F										
TS-160	= Inline Temperature Switch, Fixed 160°F										
(TS switches OK and OKF models only)											

Preferred OK Models	P/N
OK2S3.5B SC	2594320
OK3H3.5B QS	2592814
OK2S3.5B SC	2598092
OK5S3.6B QS	2598094
OK6S3.6B QS	2598096
OK7S3.6B SC	2597679

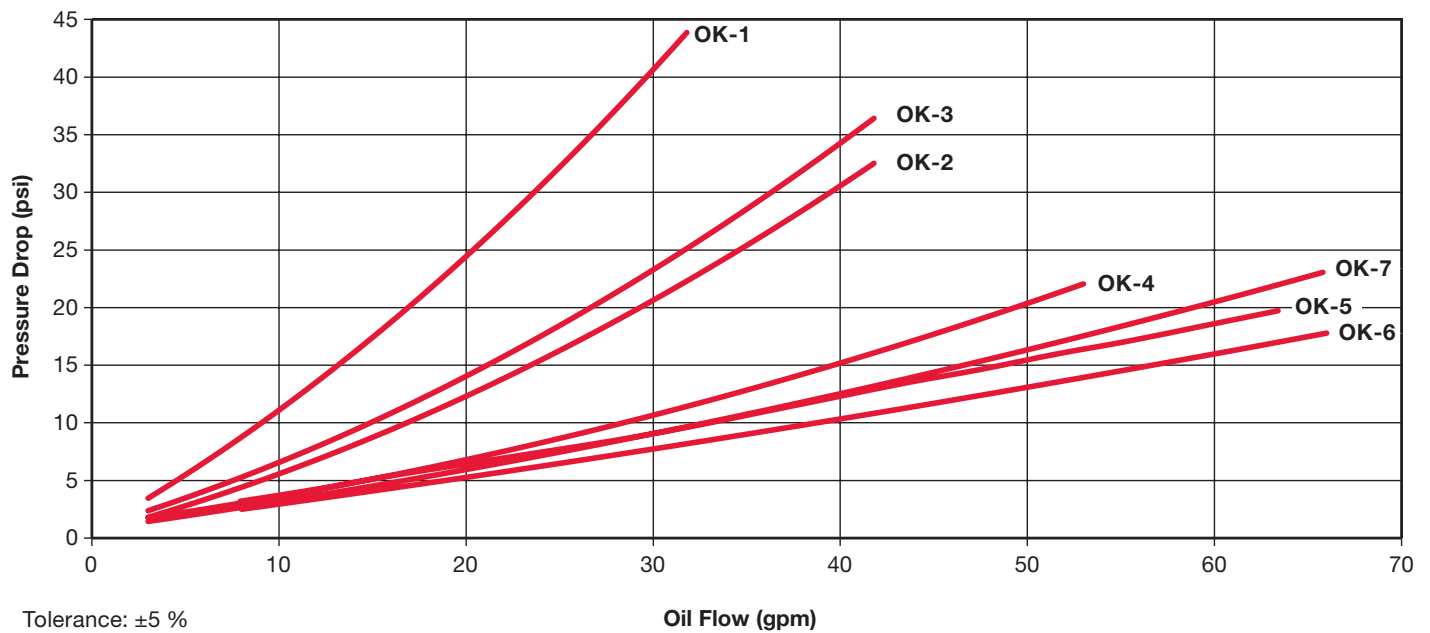
Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Heat Dissipation @ $\Delta T = 40^\circ\text{F}$



Cooling capacity depending on oil flow and the temperature differential ΔT between the oil inlet and air inlet.

Pressure Drop @ 30cSt



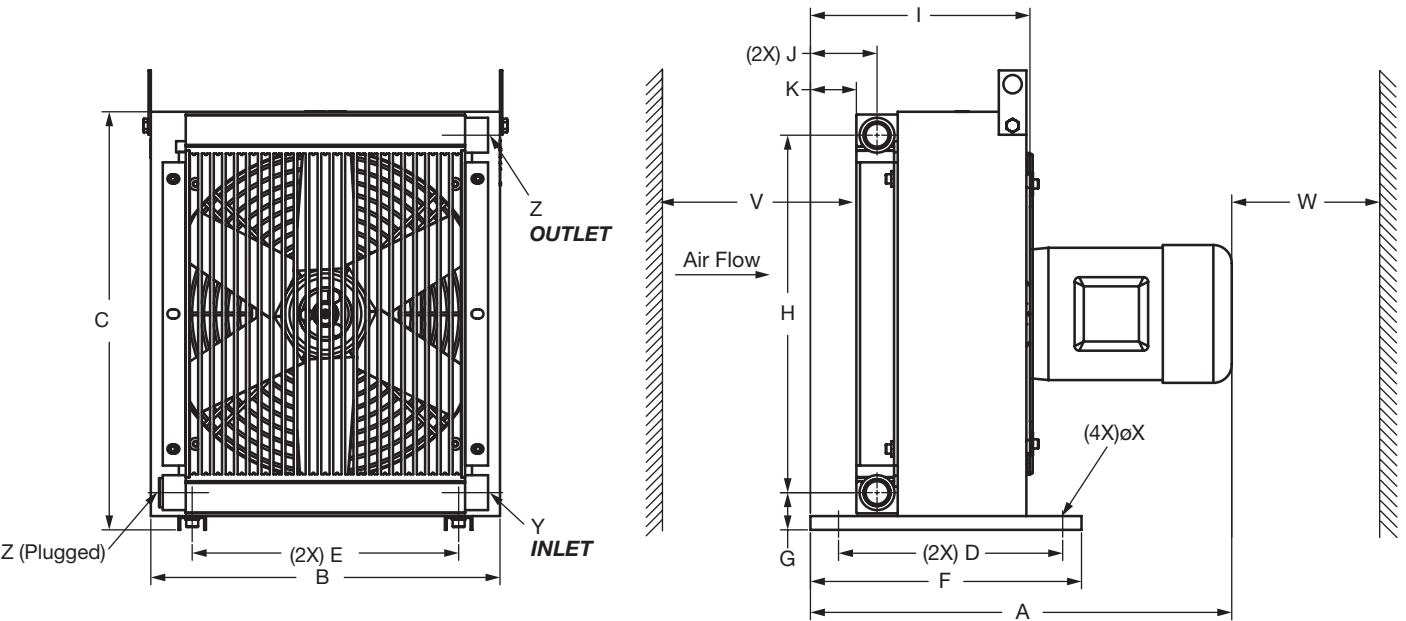
For other viscosities the result must be multiplied by the K factors below

K Factor Chart

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

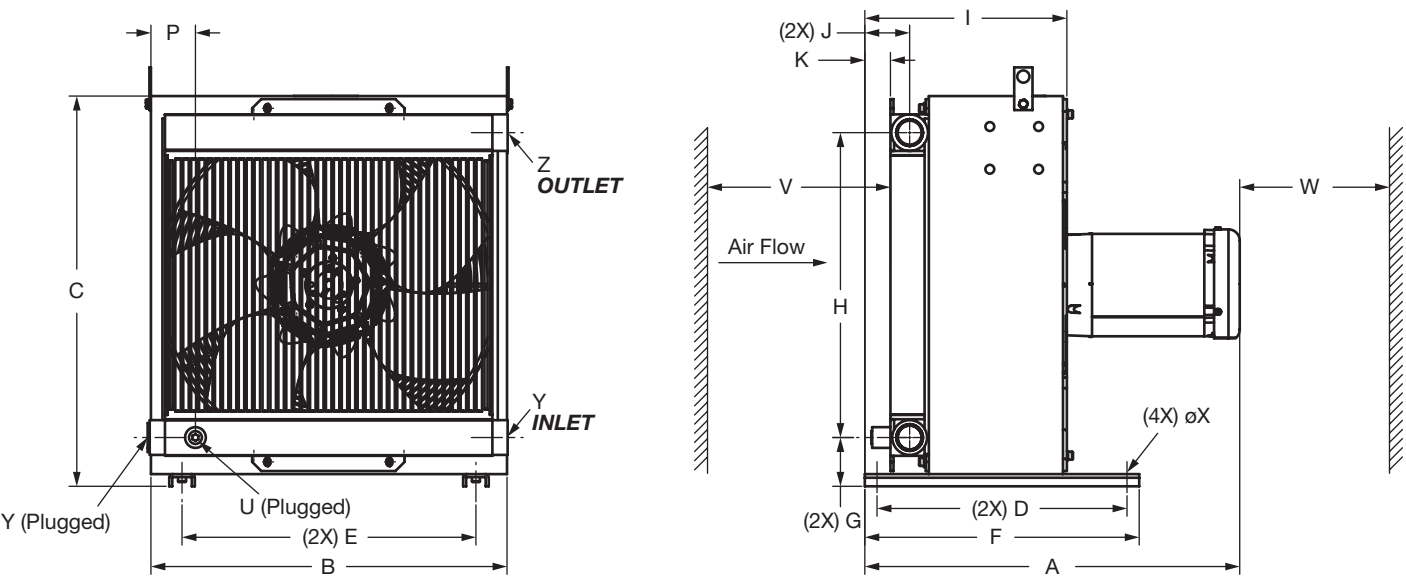
INDUSTRIAL COOLERS

Dimensions OK Size 2 - 3



Size	A	B	C	D	E	F	G	H	I	J	K	V	W	X	Y	Z
OK2H,S	17.46	12.99	13.98	10.04	6.3	11.61	1.59	11.38	7.87	2.26	1.38	7.87	19.69	0.35	SAE-12	SAE-12
OK3H,S	17.46	14.96	17.91	10.04	11.42	11.61	1.59	15.31	8.66	2.26	1.38	11.81	31.5	0.35	SAE-12	SAE-12

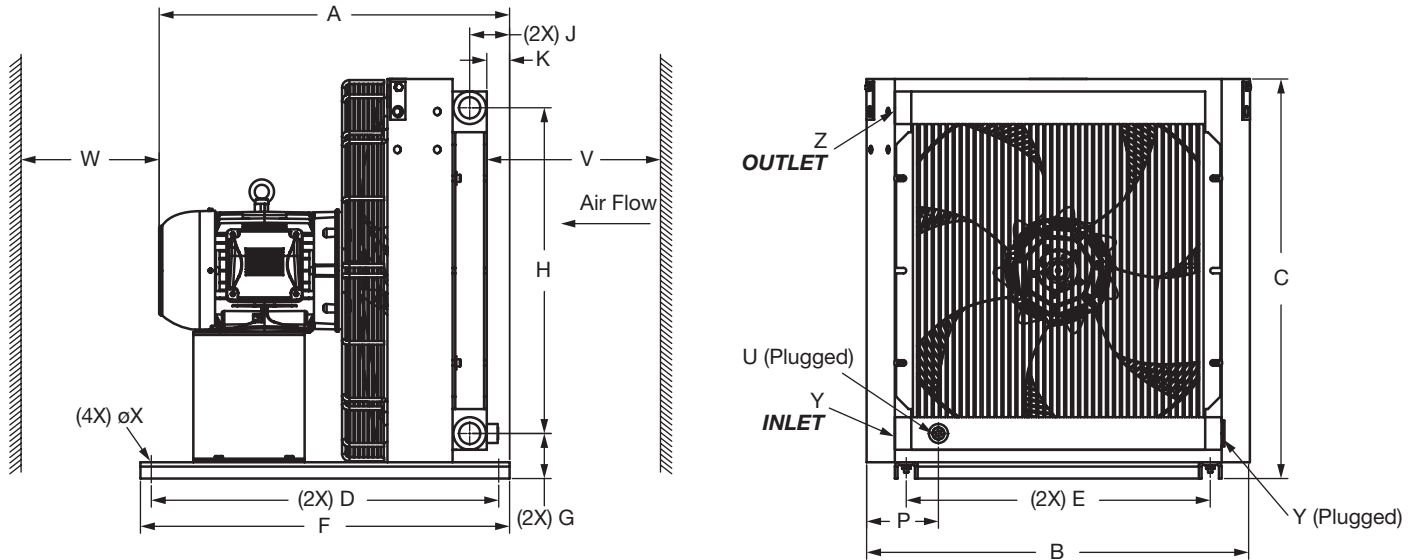
Dimensions OK Size 4 - 6



Size	A	B	C	D	E	F	G	H	I	J	K	P	U	V	W	X	Y	Z
OK4L,S	23.15	19.09	20.47	16.14	16.73	17.72	2.13	17.28	11.86	4.07	2.83	-	-	15.75	47.24	ø0.35 x 0.78 slot	SAE-16	SAE-16
OK5L,S	23.55	21.34	22.13	16.14	18.98	17.72	2.81	17.28	12.26	3.68	2.44	-	-	19.69	59.06	ø0.35 x 0.78 slot	SAE-16	SAE-16
OK6L,S	24.34	22.99	25.20	16.14	18.98	17.72	3.15	19.69	13.05	2.89	1.65	2.89	1/2" NPT	23.62	70.87	ø0.35 x 0.78 slot	SAE-20	SAE-20

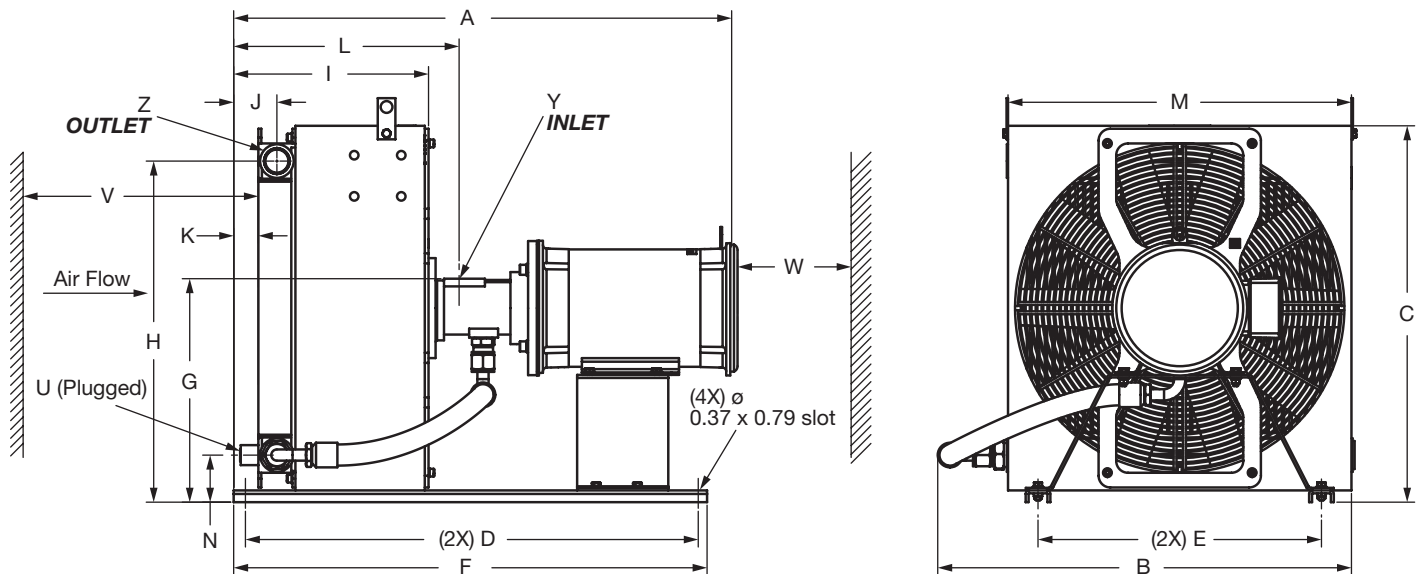
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches.

Dimensions OK Size 7



A	B	C	D	E	F	G	H	J	K	P	U	V	W	X	Y	Z
25.70	27.80	28.98	25.20	22.05	26.77	3.27	23.62	2.89	1.65	5.21	1/2" NPT	23.62	47.24	ø0.35 x 0.78 Slot	SAE-20	SAE-20

Dimensions OKA Size 4 - 6

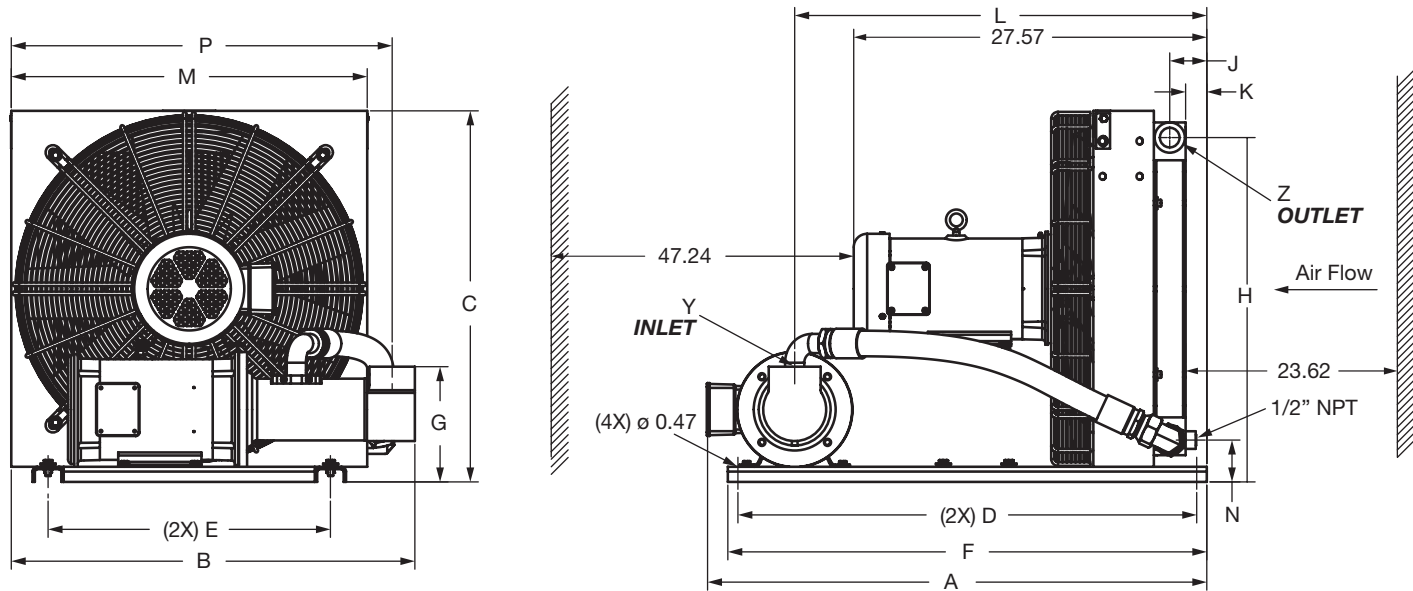


Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	U	V	W	Y	Z
OKA4L SB28	32.67	22.50	20.47	30.31	16.73	31.69	12.60	19.27	11.61	4.07	2.83	13.91	19.09	-	-	15.75	47.24	SAE-16	SAE-16
OKA4L SB40	34.41	22.50	20.47	30.31	16.73	31.69	13.39	19.27	11.61	4.07	2.83	14.44	19.09	-	-	15.75	47.24	SAE-24	SAE-16
OKA5L SB28	30.55	25.16	22.13	27.95	18.98	30.32	13.43	20.12	9.82	1.24	2.44	11.86	21.34	-	-	19.69	59.06	SAE-16	SAE-16
OKA5L SB40	32.07	25.16	22.13	27.95	18.98	30.32	14.21	20.12	9.82	1.24	2.44	12.40	21.34	-	-	19.69	59.06	SAE-24	SAE-16
OKA6L SB28	33.73	27.87	25.20	30.32	18.98	31.69	14.96	22.83	13.05	2.89	1.65	15.09	22.99	3.15	1/2" NPT	23.62	70.87	SAE-16	SAE-20
OKA6L SB40	35.23	27.87	25.20	30.32	18.98	31.69	15.75	22.83	13.05	2.89	1.65	15.62	22.99	3.15	1/2" NPT	23.62	70.87	SAE-24	SAE-20

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

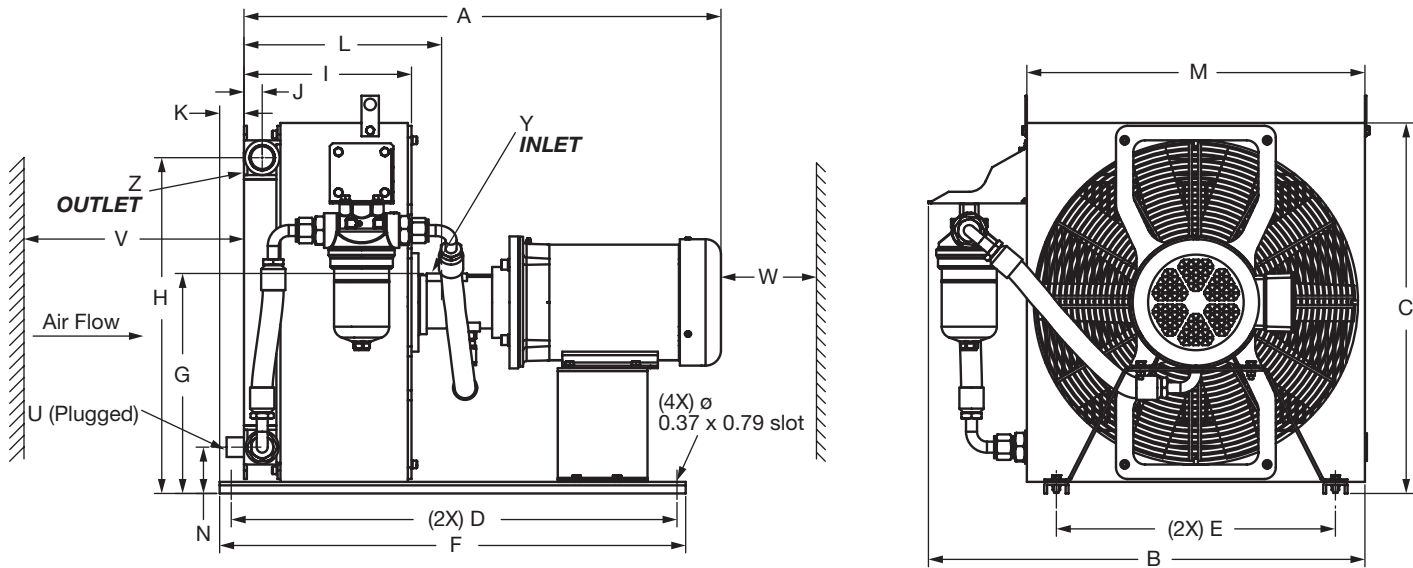
INDUSTRIAL COOLERS

Dimensions OKA Size 7



Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Y	Z
OKA7L S3.6B70	39.05	31.52	28.98	35.83	22.05	37.4	9	26.89	2.89	1.65	32.18	27.8	3.27	29.74	SAE 2" Code 61 Flange	SAE-20
OKA7L S3.6B100	40.30	33.08	28.98	35.83	22.05	37.4	10.17	26.89	2.89	1.65	31.68	27.8	3.27	31.04	SAE 2 1/2" Code 61 Flange	SAE-20

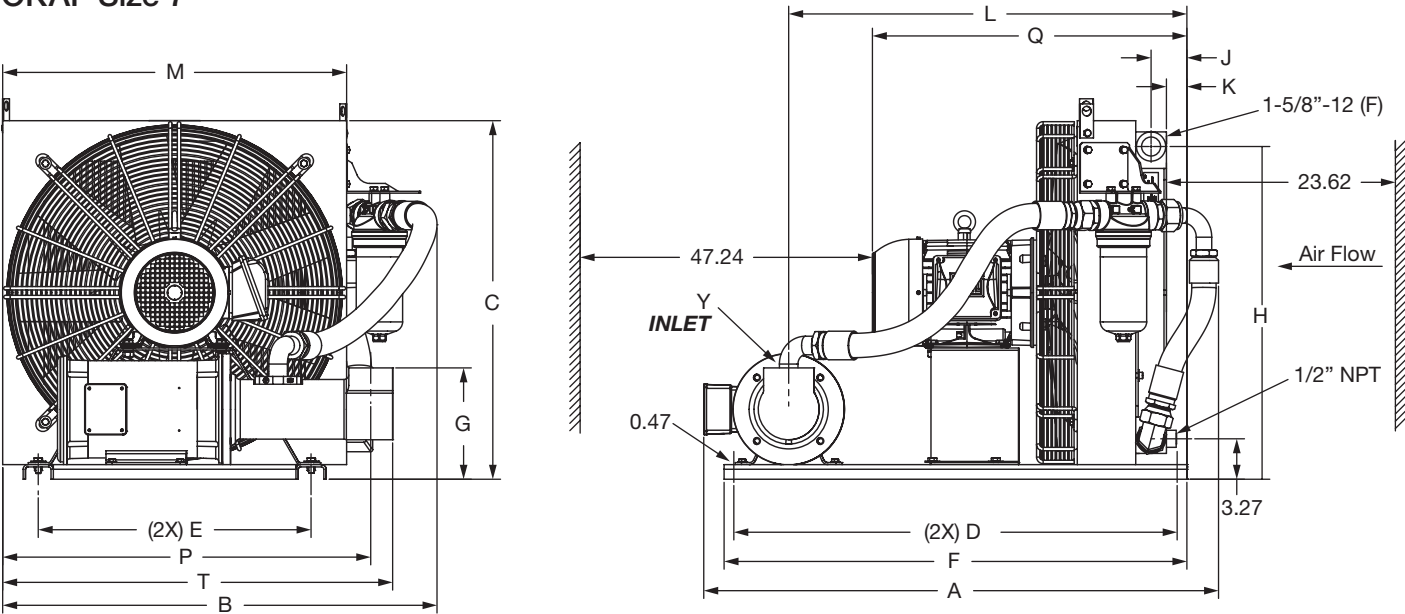
Dimensions OKAF Size 4 - 6



Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	U	V	W	Y	Z
OKAF4L SB28	32.67	25.79	20.47	30.31	16.73	31.69	12.60	19.27	11.61	4.07	2.83	13.91	19.09	-	-	15.75	47.24	SAE-16	SAE-16
OKAF4L SB40	34.41	25.79	20.47	30.31	16.73	31.69	13.39	19.27	11.61	4.07	2.83	14.44	19.09	-	-	15.75	47.24	SAE-24	SAE-16
OKAF5L SB28	30.55	29.34	22.13	27.95	18.98	30.32	13.43	20.12	9.82	1.24	2.44	11.86	21.34	-	-	19.69	59.06	SAE-16	SAE-16
OKAF5L SB40	32.07	29.34	22.13	27.95	18.98	30.32	14.21	20.12	9.82	1.24	2.44	12.40	21.34	-	-	19.69	59.06	SAE-24	SAE-16
OKAF6L SB28	33.73	31.00	25.20	30.32	18.98	31.69	14.96	22.83	13.05	2.89	1.65	15.09	22.99	3.15	1/2" NPT	23.62	70.87	SAE-16	SAE-20
OKAF6L SB40	35.23	31.00	25.20	30.32	18.98	31.69	15.75	22.83	13.05	2.89	1.65	15.62	22.99	3.15	1/2" NPT	23.62	70.87	SAE-24	SAE-20

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

Dimensions
OKAF Size 7



Size	A	B	C	D	E	F	G	H	J	K	L	M	P	Q	T	Y
OKAF7L S3.6B70	41.60	35.08	28.98	35.83	22.05	37.40	9	26.89	2.89	1.65	32.18	27.80	29.74	25.41	31.52	SAE 2" Code 61 Flange
OKAF7L S3.6B100	41.60	35.08	28.98	35.83	22.05	37.40	10.17	26.89	2.89	1.65	31.68	27.80	31.04	25.41	33.08	SAE 2-1/2" Code 61 Flange

INDUSTRIAL COOLERS

OK LN Series - AC Motor Drive

Air Cooled Oil Coolers



Features

The OK-LN is the optimized, low noise version of the OK series coolers. They are available in sizes 8-14 and have flexible adaptation to various applications to cool industrial hydraulic applications.

- Up to 200 HP cooling capacity
- Highly efficient and rugged bar-and-plate style heat exchangers
- Externally mounted heat exchangers for easy maintenance and cleaning
- Modular pump and filter options for a plug and play fluid conditioning system
- Available with HYDAC MF, LPF and FLND series filters
- Accessories include: Thermostats (adjustable and fixed), integrated thermostatic bypass valves and pressure bypass valves.
- Packaged systems with pump flows up to 62 gpm
- Maximum flows (w/o pump) up to 220 gpm

Applications



Gearboxes



Industrial



Elevators



Power Generation



Pulp & Paper



Railways



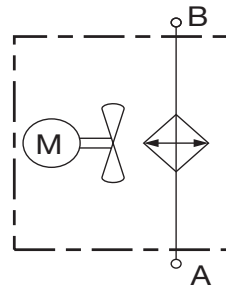
Shipbuilding



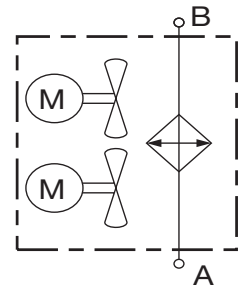
Steel / Heavy Industry

Hydraulic Symbol

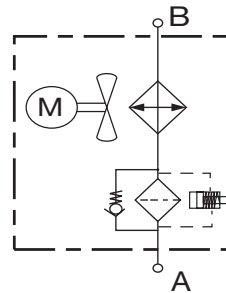
OK LN Sizes 8 - 11



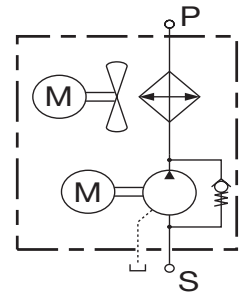
OK - LN Sizes 12 - 14



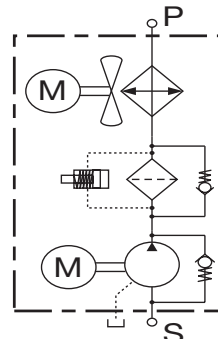
OKF LN Sizes 8 - 11



OKA LN Size 8 - 11



OKAF LN Sizes 8 - 11



Low Noise Solution

Product Development

HYDAC Cooling Systems engineers have utilized modern CFD technologies to carefully study the impact of shroud design, fan type and finger guard design on the cooling airflow, noise level, cooler performance and overall design efficiency. The goal was to achieve a significant decibel decrease while improving overall cooler efficiency. The result is the new OK-LN (Low Noise) product series.

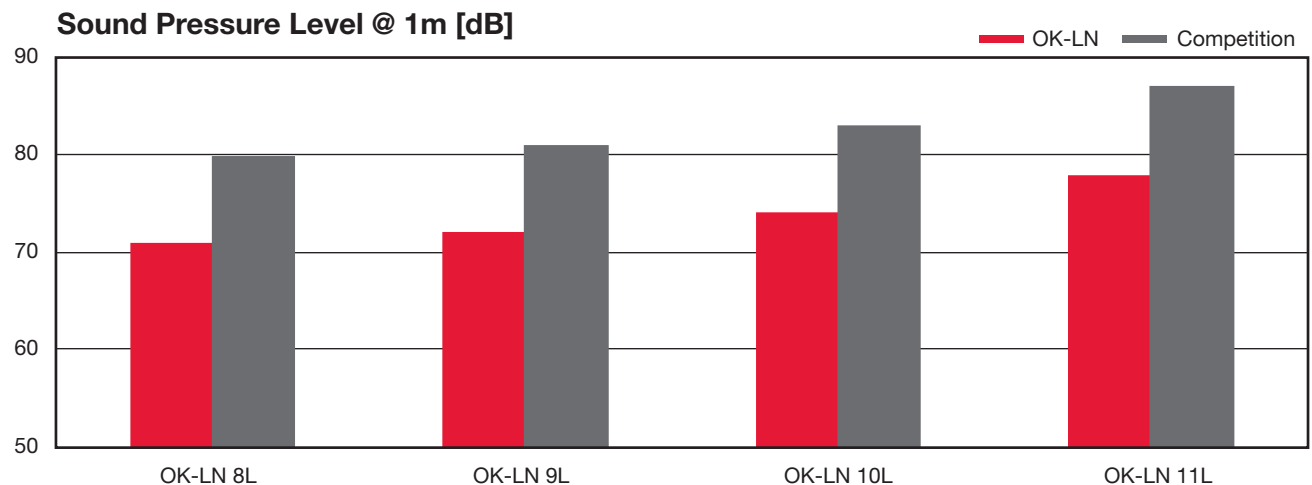
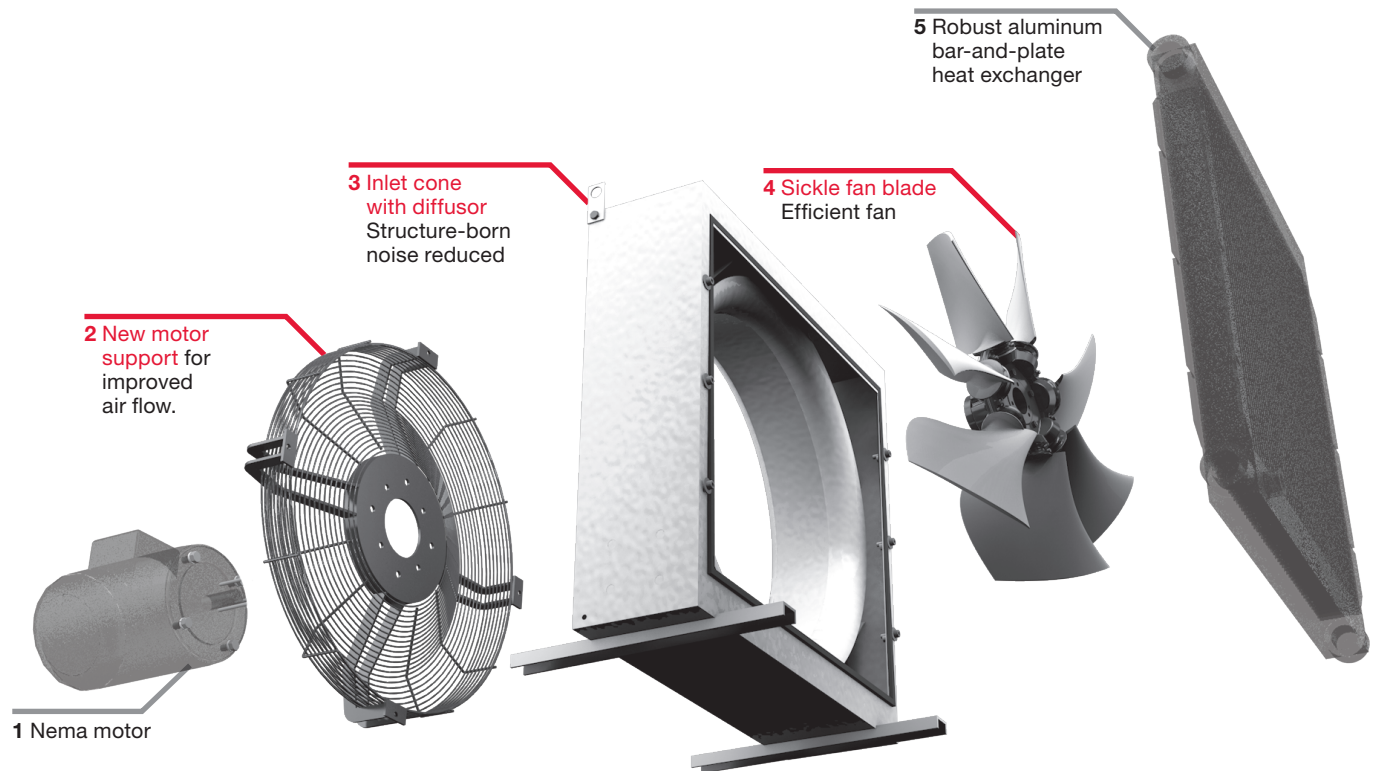
The new OK-LN cooler product line can be used in most industrial applications, where oil or a water-glycol mixture must be cooled using forced air. Typical applications include hydraulic circuits of industrial power units, gearboxes, tool-machines, transformers and others.

Noise Reduction

- Optimized air stream
- Application of a high efficiency fan with special characteristic curve
- Housing design optimization, i.e. less vibration conduction
- Decibel levels reduced without compromise of fan speed or performance

Product Series Characteristics

- Low noise - average of 10 dB lower than competitor unit
- High heat dissipation
- Low electric current consumption



INDUSTRIAL COOLERS

General

Materials	Housing: Welded steel housing Heat Exchanger: Aluminum Heavy duty bar-and-plate Motors: NEMA frame style TEFC Fan: Plastic Mounting foot and motor stand: Steel
Mounting Orientation	Horizontal, motor shaft
Maximum Pressure	w/o pump: 230 psi (16 bar) Dynamic 290 psi (20 bar) Static with pump: 145 psi (10 bar)
Fluids	Mineral oil to DIN 51524 Part 1 and 2; Permissible contamination < NAS 12 (contact factory for other fluid usages)
Maximum Oil Viscosity	w/o pump: 2000 cst w/ pump: 180cst
Maximum Oil Temperature	w/o pump: 266° F (130°C) with pump: 176° F (80°C)
Air Flow Direction	Pulled across heat exchanger

Technical Specifications

Model	Set up	Max. Oil Flow Rate (gpm)	Pump Displacement - Flow Rate			Noise (dBa @ 1 m)	Motor Specifications		
							Fan (HP)	Pump (HP)	RPM
OK-LN 8L, OKF-LN 8L	Fan	74	NA			75.9	1.5	NA	1200
OKA-LN 8L, OKAF-LN 8L	Fan w/pump	-	70cc/rev 34.3 gpm	100 cc/rev 47.5 gpm	130 cc/rev 61.8 gpm	TBD	1.5	5 (70cc/rev) 7.5 (100cc/rev) 10 (130cc/rev)	1200 / 1800
OK-LN 8S, OKF-LN 8S	Fan	74	NA			82.7	3	NA	1800
OKA-LN 8S, OKAF-LN 8S	Fan w/pump	-	70cc/rev 34.3 gpm	100 cc/rev 47.5 gpm	130 cc/rev 61.8 gpm	TBD	3	5 (70cc/rev) 7.5 (100cc/rev) 10 (130cc/rev)	1800/ 1800
OK-LN 9L, OKF-LN 9L	Fan	79	NA			73	1.5	NA	1200
OKA-LN 9L, OKAF-LN 9L	Fan w/ pump	-	70cc/rev 34.3 gpm	100 cc/rev 47.5 gpm	130 cc/rev 61.8 gpm	TBD	1.5	5 (70cc/rev) 7.5 (100cc/rev) 10 (130cc/rev)	1200 / 1800
OK-LN 10L, OKF-LN 10L	Fan	79	NA			80.1	3	NA	1200
OKA-LN 10L, OKAF-LN 10L	Fan w/pump	-	70cc/rev 34.3 gpm	100 cc/rev 47.5 gpm	130 cc/rev 61.8 gpm	TBD	3	5 (70cc/rev) 7.5 (100cc/rev) 10 (130cc/rev)	1200 / 1800
OK-LN 11L, OKF-LN 11L	Fan	79	NA			83.5	5	NA	1200
OKA-LN 11L, OKAF-LN 11L	Fan w/ pump	-	70cc/rev 34.3 gpm	100 cc/rev 47.5 gpm	130 cc/rev 61.8 gpm	TBD	5	5 (70cc/rev) 7.5 (100cc/rev) 10 (130cc/rev)	1200 / 1800
OK-LN 12L	Fan	220	NA			83.1	(2x) 3	NA	1200
OK-LN 14L	Fan	220				86.5	(2x) 5		1200
OK-LN 14S	Fan	220				TBD	(2x) 7.5		1800

Model Code

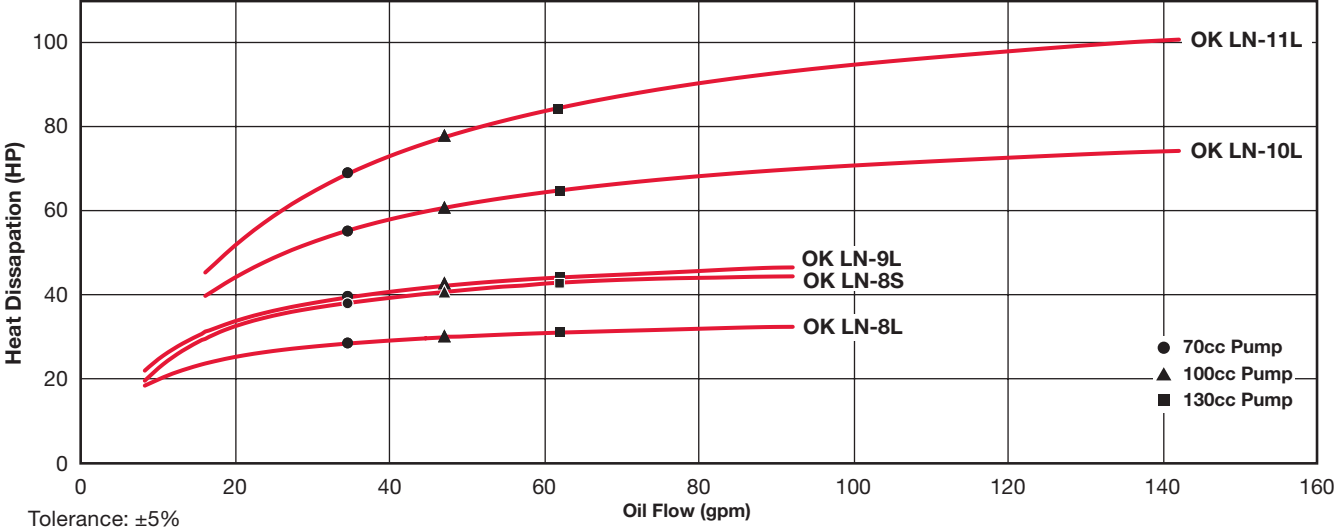
	OKAF-LN	10L	3.6	B	70	LPF240	3	B	IBP	2	TS140
Model											
OK- LN	= Basic Cooler										
OKF- LN	= Cooler with Filter (sizes 8-11 only)										
OKA- LN	= Cooler with Pump (sizes 8-11 only)										
OKAF- LN	= Cooler with Pump & Filter (sizes 8-11 only)										
Size											
8L, 8S, 9L, 10L, 10S, 11L, 11S, 12L, 14L, 14S											
(Note: S = 1800 RPM, L = 1200 RPM)											
Modification Number (latest version supplied)											
Motor Voltage											
B	= 230/460 Volts, 3ph										
C	= 575 Volts, 3ph										
X	= No Motor										
Pump											
(omit)	= No Pump										
70	= 70 ccm/rev, L/S=34.3 gpm										
100	= 100 ccm/rev, L/S=47.5 gpm										
130	= 130 ccm/rev, L/S=61.8 gpm										
Filter Type											
(omit)	= No Filter										
MF195	= Spin-On 60 rated gpm										
LPF240	= Cartridge Filter 63 rated gpm										
LPF280	= Cartridge Filter 73 rated gpm										
FLND250	= Duplex Filter 66 rated gpm										
FLND400	= Duplex Filter 105 rated gpm										
Micron Rating											
(omit)	= No Filter										
3	= 3 micron, Absolute										
5	= 5 micron, Absolute (MF, LPF only)										
6	= 6 micron, Absolute (FLND only)										
10	= 10 micron, Absolute										
20	= 20 micron, Absolute (MF, LPF only)										
25	= 25 micron, Absolute (FLND only)										
Filter Indicator											
(omit)	= No Filter										
B	= Visual										
C	= Electrical (AC/DC) (LPF + FLND filters only)										
D24	= 24 VDC Lamp/Switch (LPF + FLND filters only)										
D115	= 115 VAC Lamp/Switch (LPF + FLND filters only)										
D230	= 230 VAC Lamp/Switch (LPF + FLND filters only)										
Accessories											
(omit)	= None										
IBT	= Internal Temperature Bypass Valve										
IBP	= Internal Pressure Bypass Valve										
Opening Temperature (IBT Only)											
45	= Opens 113°F (45°C) Closes at 131°F (55°C)										
50	= Opens 130°F (50°C) Closes at 150°F (65°C)										
60	= Opens 140°F (60°C) Closes at 158°F (70°C)										
Opening Pressure (IBT & IBP)											
2	= 2 bar (29 psi)										
3	= 3 bar (45 psi)										
4	= 4 bar (58 psi) (IBP only)										
Temperature Switch											
TR1	= Reservoir Thermostat, adjustable 32° to 200°F (must be ordered as a separate line item)										
AITR	= Inline Thermostat, adjustable 32°F to 200°F										
TS-120	= Inline Temperature Switch, Fixed 120°F										
TS-140	= Inline Temperature Switch, Fixed 140°F										
TS-160	= Inline Temperature Switch, Fixed 160°F										
(TS switches OK and OKF models only)											

Preferred OK-LN Models	P/N
OK-LN8S3.6B QS	2597967
OK-LN8L3.6B SC	2597966
OK-LN10L3.6B QS	2597969
OK-LN10S3.6B SC	2599150
OK-LN11L3.6B QS	2597970
OK-LN11S3.6B SC	2957463

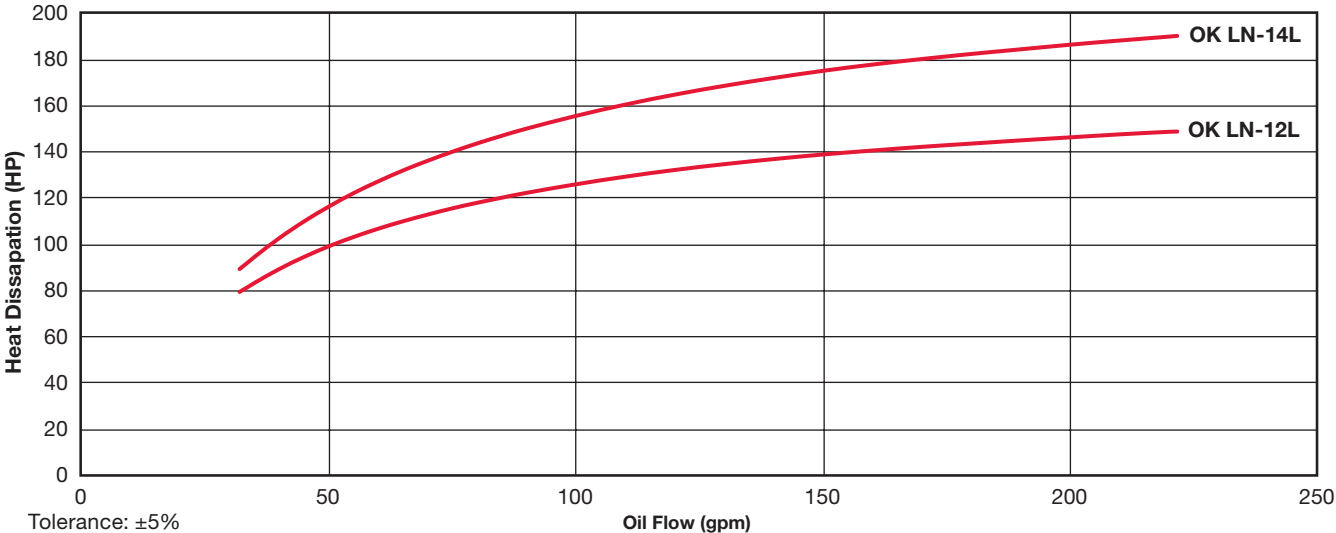
Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

INDUSTRIAL COOLERS

Heat Dissipation @ $\Delta T = 40^{\circ}\text{F}$ Sizes 8 -11

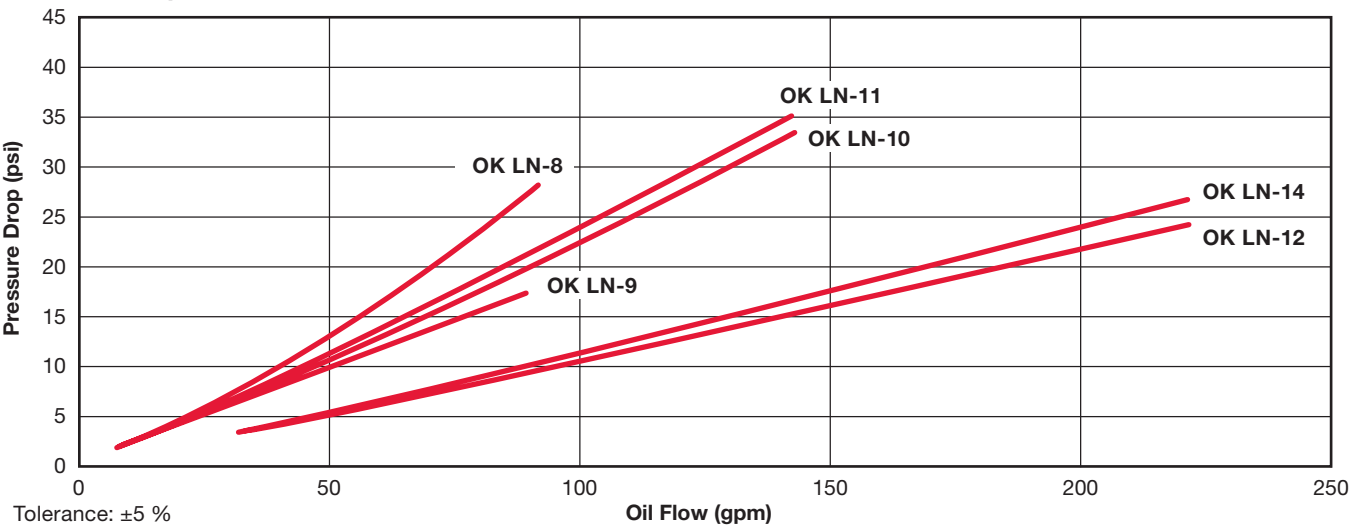


Sizes 12, 14



Cooling capacity depending on oil flow and the temperature differential ΔT between the oil inlet and air inlet.

Pressure Drop @ 30cSt Sizes 8 -12, 14



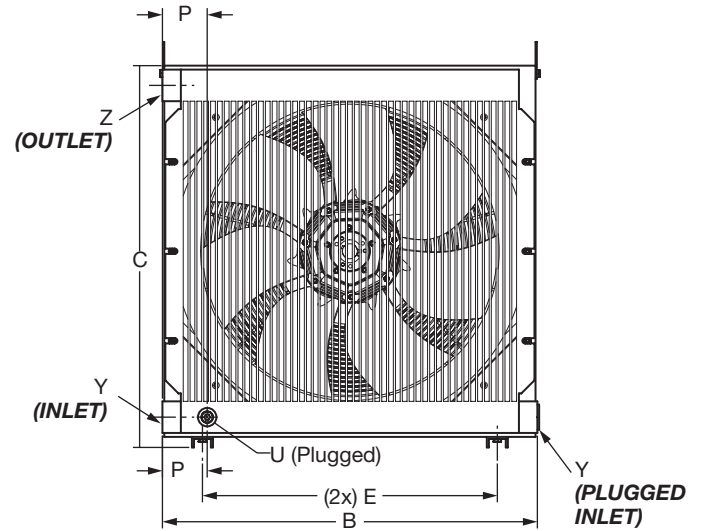
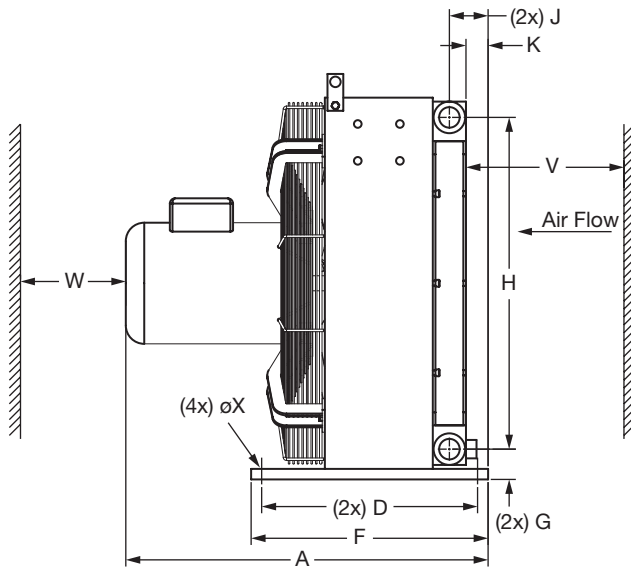
Note: Values measured at ΔT of 40°F , may vary at lower ΔT .

Pressure drop curves above use fluid viscosity of 30 cSt. For other viscosities the result must be multiplied by the K factors below.

K Factor Chart

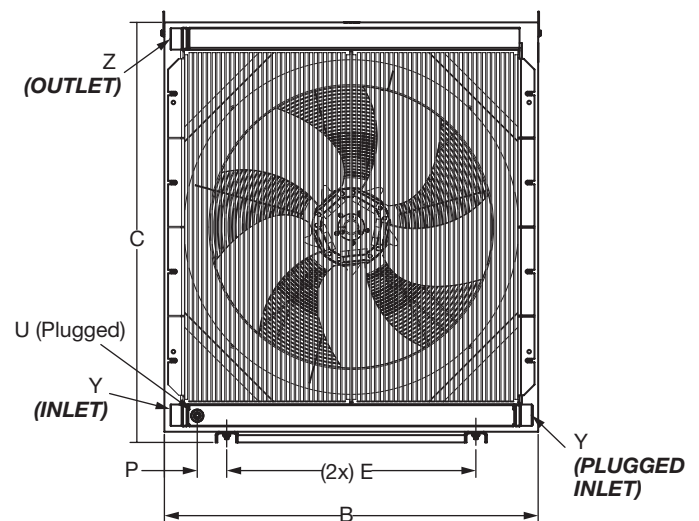
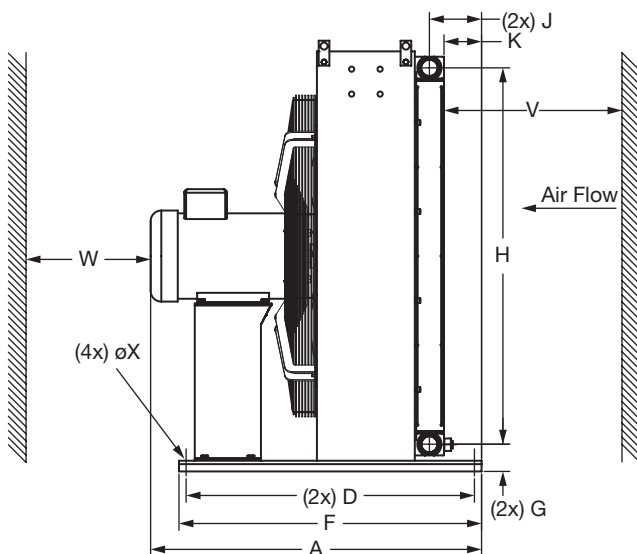
K Factor	0.5	0.65	0.77	1	1.3	1.52	1.9	2.8	5.3
Viscosity (SSU)	46	70	102	150	213	250	315	464	695
Viscosity (cSt)	10	15	22	32	46	54	68	100	150

Dimensions OK LN Size 8 - 9



Size	A	B	C	D	E	F	G	H	I
OKLN8L,S3.6B	27.09	27.76	28.54	16.14	22.05	17.72	2.26	24.80	2.89
OKLN9L3.6B	33.15	31.10	34.65	29.53	27.56	31.10	3.01	29.80	5.83
Size	K	P	U	V	W	X	Y	Z	
OKLN8L,S3.6B	1.65	3.21	1/2" NPT	23.62	47.24	ø0.35x0.78 Slot	SAE-20	SAE-20	
OKLN9L3.6B	4.21	3.34	1/2" NPT	35.43	98.43	0.47	SAE-24	SAE-24	

Dimensions OK LN Size 10 - 11

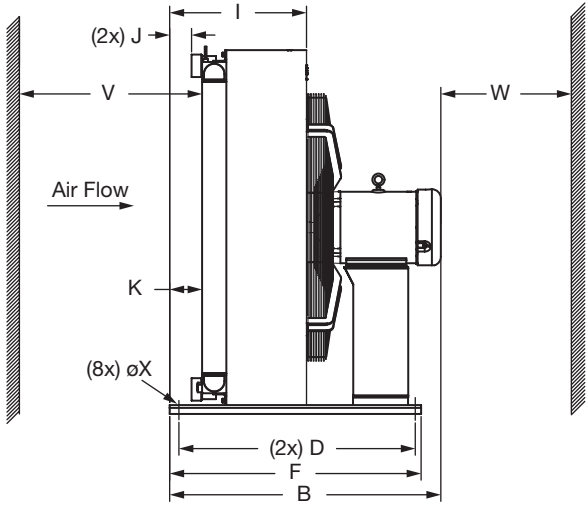
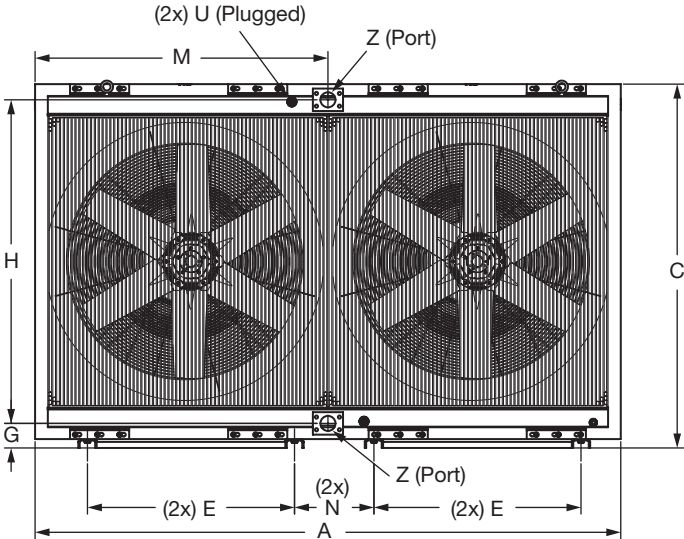


Size	A	B	C	D	E	F	G	H	J
OKLN10L3.6B	36.09	36.61	40.55	31.89	27.56	33.46	2.95	35.83	6.31
OKLN11L3.6B	36.60	41.34	46.46	31.89	27.56	33.46	3.01	41.61	5.77
Size	K	P	U	V	W	X	Y	Z	
OKLN10L3.6B	4.23	3.72	1/2" NPT	35.43	110.24	0.47	SAE 24	SAE 24	
OKLN11L3.6B	4.15	3.63	1/2" NPT	39.37	118.11	0.47	SAE 24	SAE 24	

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

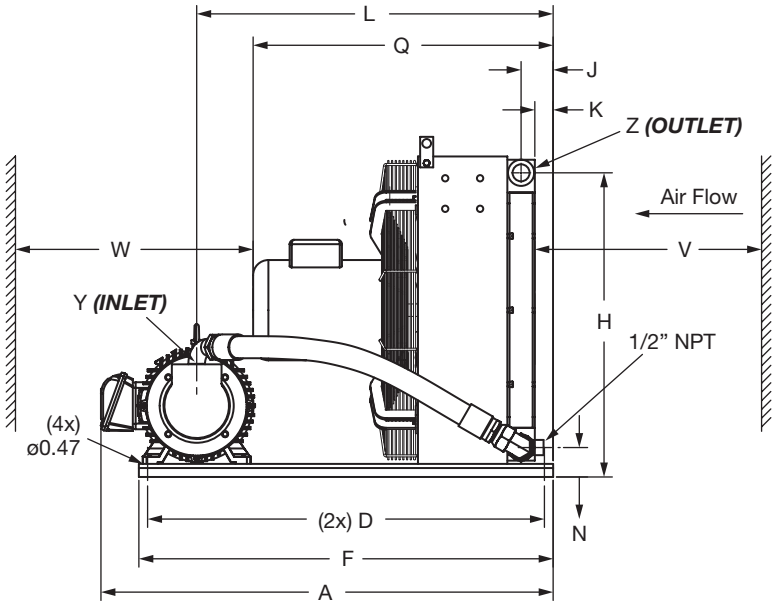
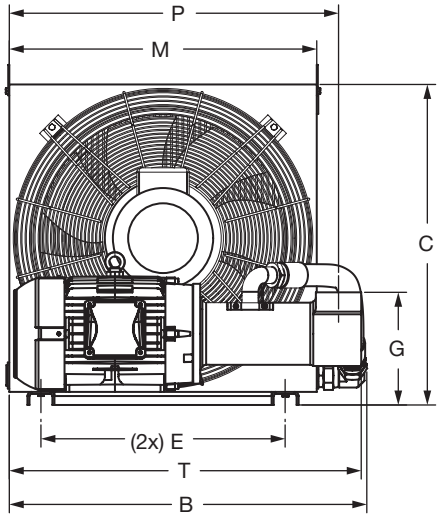
INDUSTRIAL COOLERS

Dimensions OK LN Size 12 - 14



Size	A	B	C	D	E	F	G	H
OKLN12	72.8	36.1	43.7	31.9	27.5	33.5	3.97	37.0
OKLN14	77.9	36.8	48.4	31.9	27.5	33.5	3.3	43.0
Size	K	M	U	V	W	X	Y/Z	
OKLN12	36.4	36.4	1/2" NPT	35.4	110	.475	2" SAE Code 61	
OKLN14	38.9	38.9	1/2" NPT	39.4	118	.475	2" SAE Code 61	

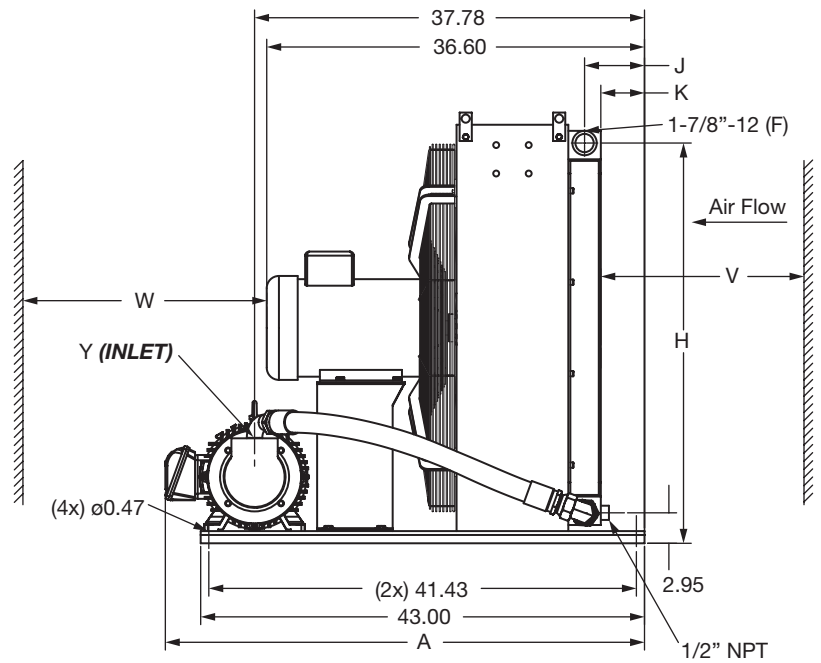
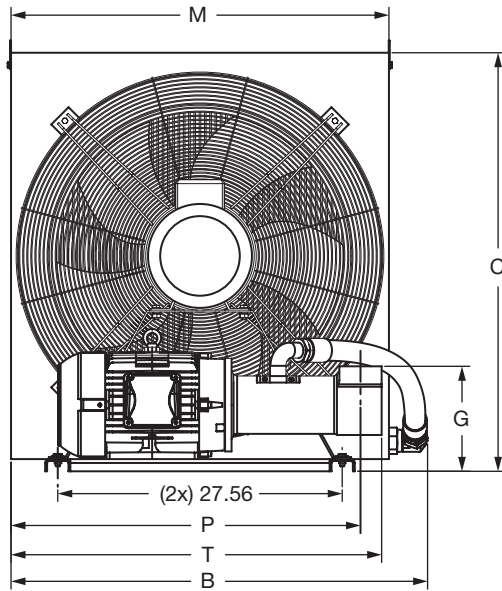
Dimensions OKA LN Size 8 - 9



Size	A	B	C	D	E	F	G	H	J	K
8L,S3.6B70	39.05	32.24	28.94	35.83	22.05	37.4	9.00	27.46	2.89	1.65
8L,S3.6B100, 130	40.85	32.24	28.94	35.83	22.05	37.4	10.17	27.46	2.89	1.65
9L,S3.6B70	44.64	35.48	34.65	41.43	27.56	43.0	9.00	32.82	5.83	4.21
9L,S3.6B100, 130	46.45	35.48	34.65	41.43	27.56	43.0	10.17	32.82	5.83	4.21
Size	L	M	N	P	Q	T	V	W	Y	Z
8L,S3.6B70	32.18	27.76	2.66	29.72	27.09	31.50	23.62	47.24	SAE 2"	SAE 20
8L,S3.6B100, 130	32.18	27.76	2.66	29.72	27.09	31.77	23.62	47.24	SAE 2-1/2"	SAE 20
9L,S3.6B70	37.78	31.10	2.95	31.10	33.15	32.87	35.43	98.43	SAE 2"	SAE 24
9L,S3.6B100, 130	37.78	31.10	2.95	31.10	33.15	33.15	35.43	98.43	SAE 2-1/2"	SAE 24

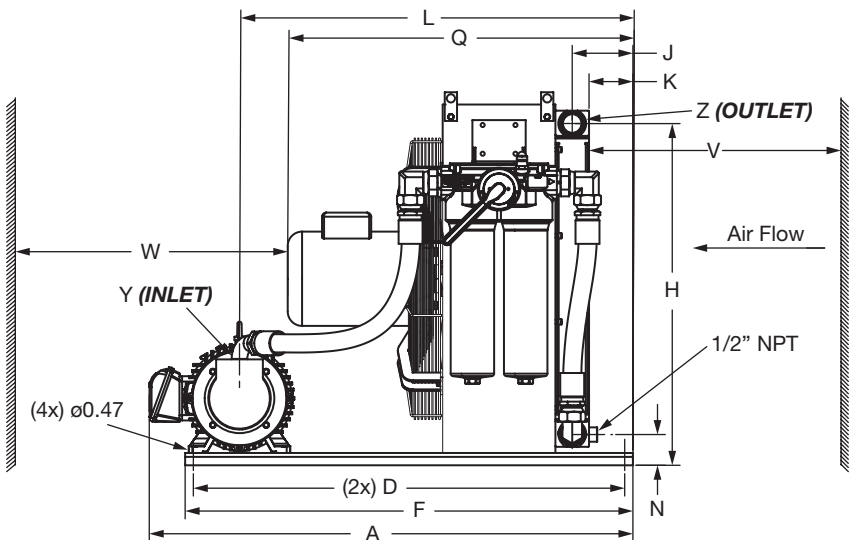
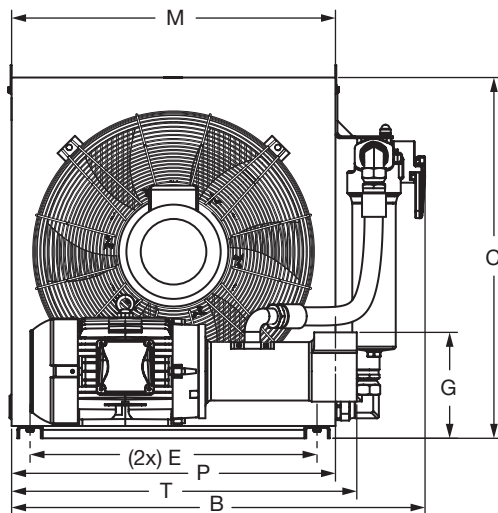
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches.

Dimensions OKA LN Size 10 - 11



Size	A	B	C	D	E	F	G	H	J	K
8L, S3.6B70	39.05	32.24	28.94	35.83	22.05	37.4	9.00	27.46	2.89	1.65
8L,S3.6B100, 130	40.85	32.24	28.94	35.83	22.05	37.4	10.17	27.46	2.89	1.65
9L,S3.6B70	44.64	35.48	34.65	41.43	27.56	43.0	9.00	32.82	5.83	4.21
9L,S3.6B100, 130	46.45	35.48	34.65	41.43	27.56	43.0	10.17	32.82	5.83	4.21
Size	L	M	N	P	Q	T	V	W	Y	Z
8L, S3.6B70	32.18	27.76	2.66	29.72	27.09	31.50	23.62	47.24	SAE 2"	SAE 20
8L,S3.6B100, 130	32.18	27.76	2.66	29.72	27.09	31.77	23.62	47.24	SAE 2-1/2"	SAE 20
9L,S3.6B70	37.78	31.10	2.95	31.10	33.15	32.87	35.43	98.43	SAE 2"	SAE 24
9L,S3.6B100, 130	37.78	31.10	2.95	31.10	33.15	33.15	35.43	98.43	SAE 2-1/2"	SAE 24

Dimensions OKAF LN Size 8 - 9

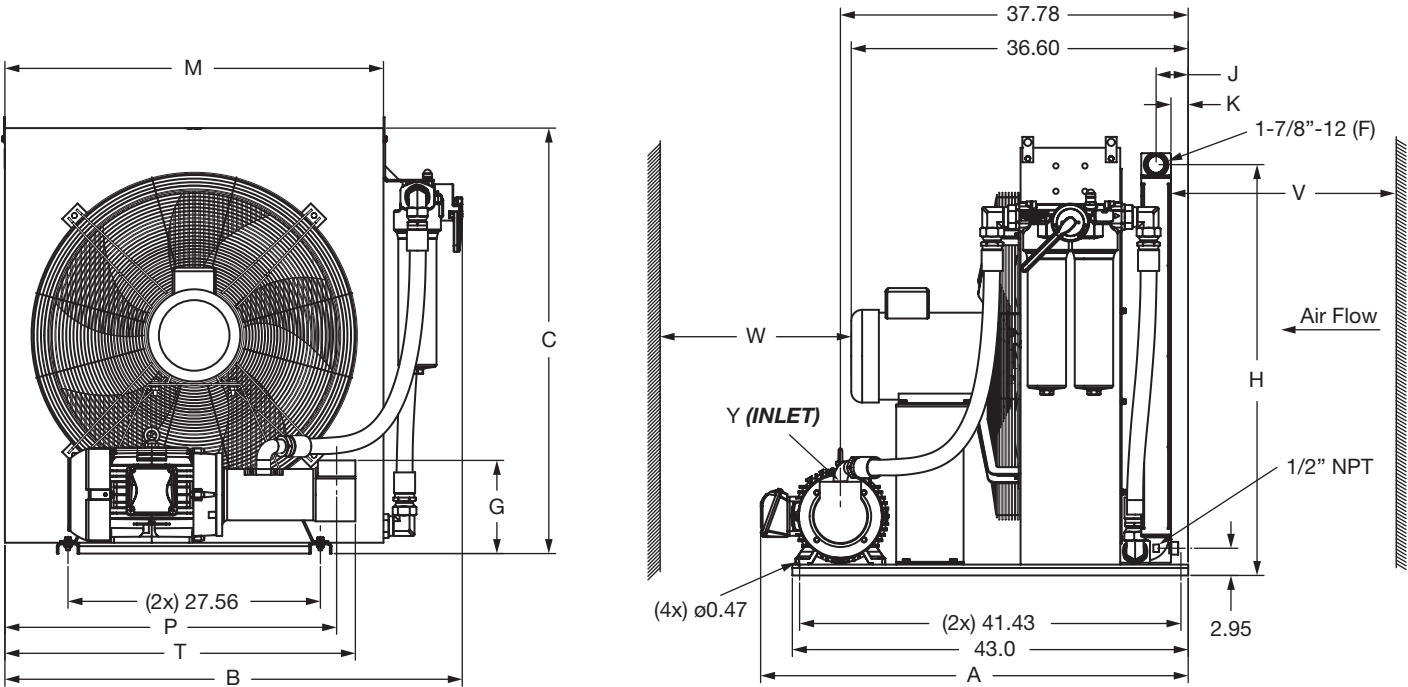


Size	A	B	C	D	E	F	G	H	J	K	L
OKAFLN8L,S3.6B70	39.05	36.36	28.94	35.83	22.05	37.40	9.00	27.46	2.89	1.65	32.18
OKAFLN8L,S3.6B100,130	40.85	36.36	28.94	35.83	22.05	37.40	10.17	27.46	2.89	1.65	32.18
OKAFLN9L,S3.6B70	44.64	39.70	34.65	41.43	27.56	43.00	9.00	32.82	5.83	4.21	37.78
OKAFLN9L,S3.6B100,130	46.45	39.70	34.65	41.43	27.56	43.00	10.17	32.82	5.83	4.21	37.78
Size	M	N	P	Q	T	V	W	Y		Z	
OKAFLN8L,S3.6B70	27.76	2.66	29.72	27.09	31.50	23.62	47.24	SAE 2" Code 61 Flange		SAE 20	
OKAFLN8L,S3.6B100,130	27.76	2.66	29.72	27.09	31.77	23.62	47.24	SAE 2-1/2" Code 61 Flange		SAE 20	
OKAFLN9L,S3.6B70	31.10	2.95	31.10	33.15	32.87	35.43	98.43	SAE 2" Code 61 Flange		SAE 24	
OKAFLN9L,S3.6B100,130	31.10	2.95	31.10	33.15	33.15	35.43	98.43	SAE 2-1/2" Code 61 Flange		SAE 24	

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

INDUSTRIAL COOLERS

Dimensions
OKAF LN Size 10 - 11



Size	A	B	C	G	H	J	K	M	P	T	V	W	Y
OKAFLN10L3.6B70	44.64	45.21	40.55	9.00	38.78	5.81	4.23	36.61	33.86	35.63	35.43	110.24	SAE 2" Code 61 Flange
OKAFLN10L3.6B100,130	46.45	45.21	40.55	10.17	38.78	5.81	4.23	36.61	33.86	35.91	35.43	110.24	SAE 2-1/2" Code 61 Flange
OKAFLN11L3.6B70	44.64	49.94	46.46	9.00	44.64	5.77	4.15	41.34	36.22	37.99	39.37	118.11	SAE 2" Code 61 Flange
OKAFLN11L3.6B100,130	46.45	49.94	46.46	10.17	44.64	5.77	4.15	41.34	36.22	38.27	39.37	118.11	SAE 2-1/2" Code 61 Flange

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

Notes



INDUSTRIAL COOLERS

ELD M Series

Rear Mounted NEMA Motor Coolers

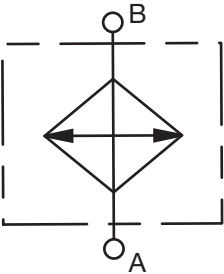


Features

These coolers use a bar-and plate design for high efficiency. Included with the cooler package is a shroud with gasket to seal to the motor fan and adjustable mounting feet.

- Coolers to mount on rear of TEFC frame motors
- Power unit case drain coolers
- 3 sizes
- Utilizes ELD standard cores and shrouds
- Air filter available upon request

Hydraulic Symbol



Applications



Industrial

Technical Specifications

Size	TEFC Motor Frame Size	Part Number
ELD1.5M	48-184	2595792
ELD2M	213-256	2595793
ELD3M	254-365	2595794

Preferred ELDM Models	P/N
ELD1.5M1.5 QS	2595792
ELD2M1.5 QS	2595793
ELD3M1.5 QS	2595794

Model Code

Model

ELD = Air Cooled Oil Cooler

Size

1.5M
2M
3M

Modification Number (latest version supplied)

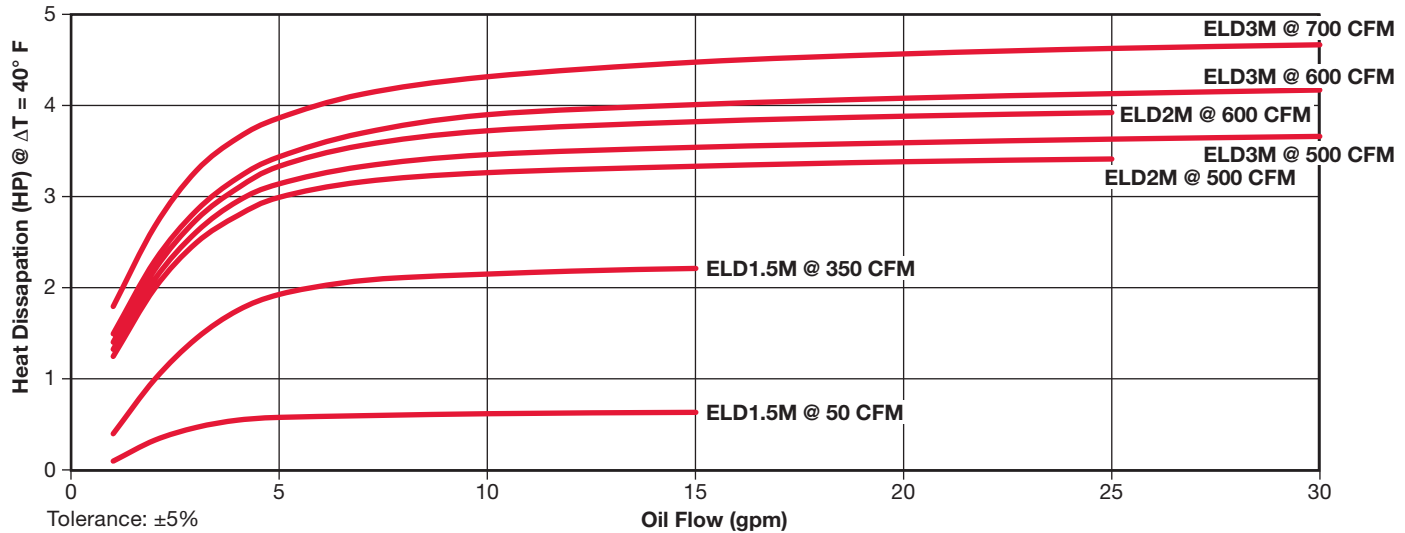
ELD

1.5M

1.5

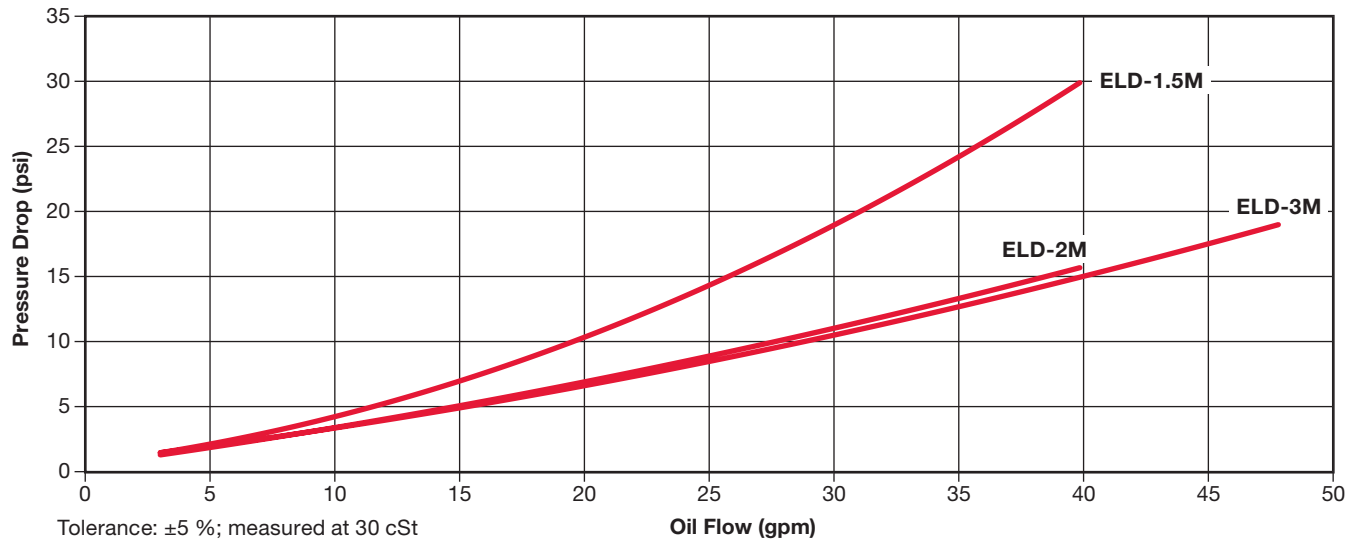
Model Codes containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability

Heat Dissipation



Cooling capacity depending on oil flow and the temperature differential ΔT between the oil inlet and air inlet.

Pressure Drop



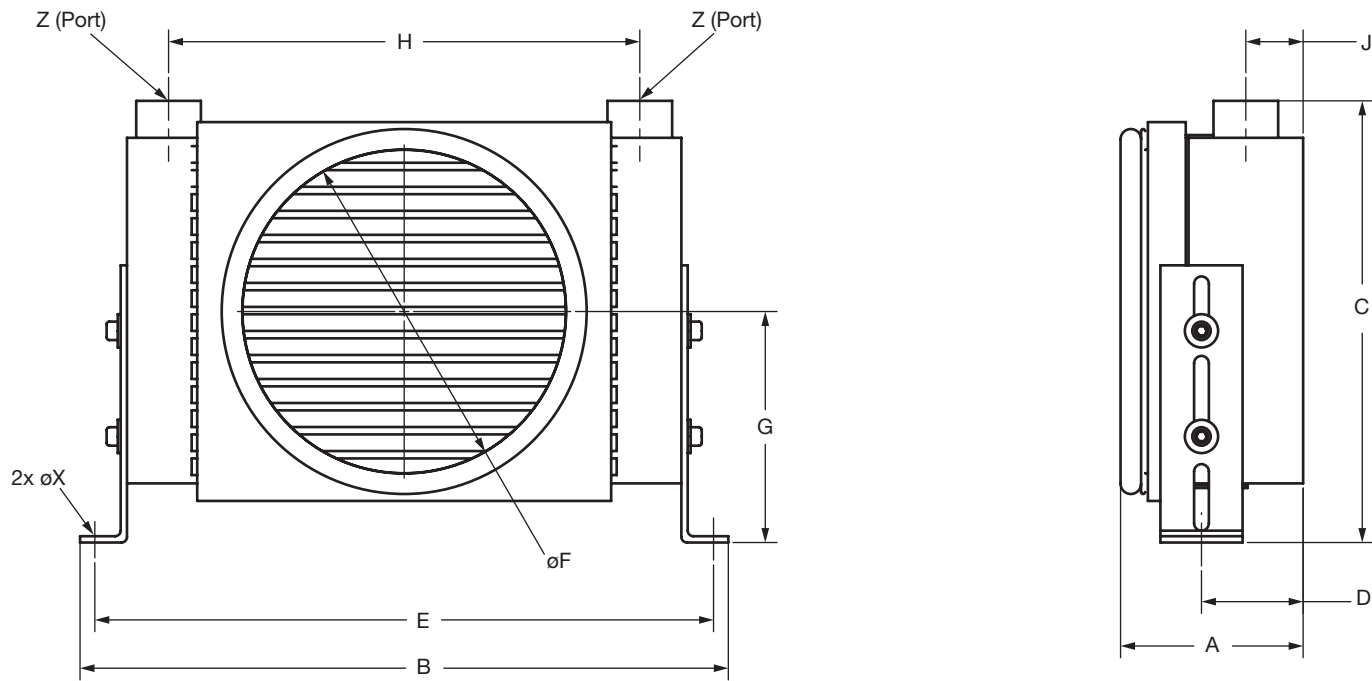
Note: Values measured at ΔT of $40^{\circ}F$, may vary at lower ΔT .
Pressure drop curves above use fluid viscosity of 30 cSt. For other viscosities the result must be multiplied by the K factors below.

K Factor Chart

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

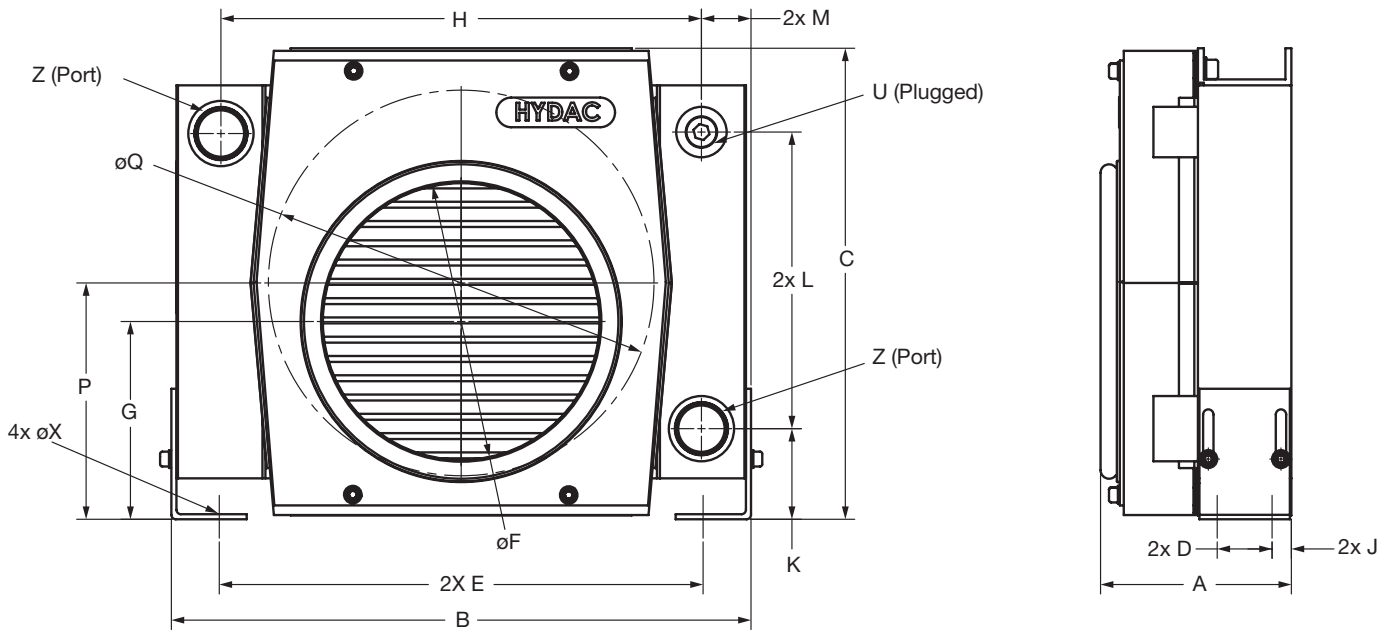
INDUSTRIAL COOLERS

Dimensions ELD M Size 1.5



A	B	C	D	E	F	G	H	J	X	Z
3.90	13.81	9.41 - 10.43	2.17	13.18	6.89	4.92 - 5.94	10.04	1.22	0.35	SAE 12

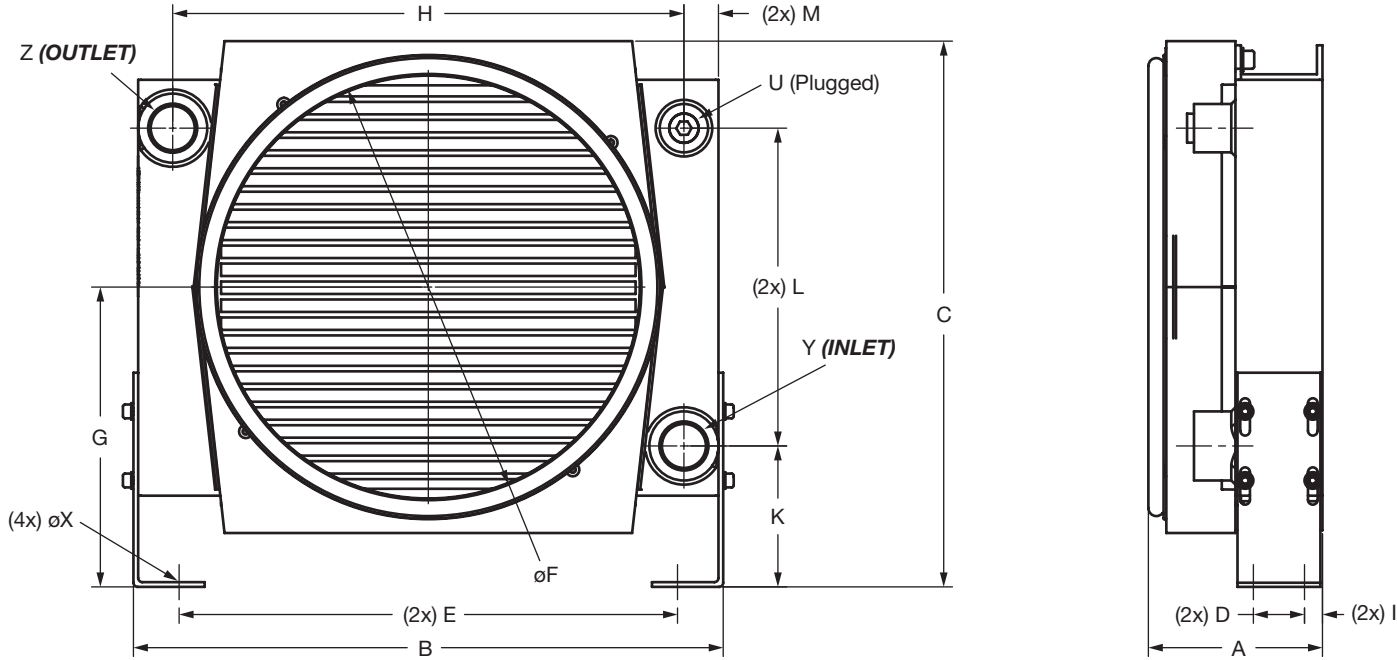
Dimensions ELD M Size 2



A	B	C	D	E	F	G	H	J
5.07	15.39	12.50 - 13.68	1.46	12.84	7.34	5.25 - 6.43	12.76	0.51
K	L	M	P	Q	U	X	Y	Z
2.41 - 3.59	7.87	1.32	6.27 - 7.45	10.24	1/2" NPT	$\phi 0.35 \times 0.55$ slot	1-5/16"-12 (F)	SAE 16

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

Dimensions
ELD M Size 3



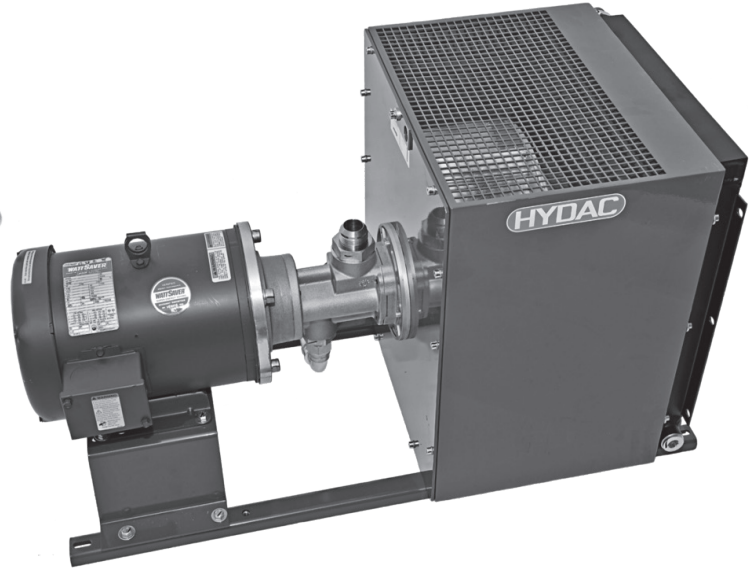
A	B	C	D	E	F	G	H
5.07	16.80	15.55 - 16.34	1.46	14.20	12.05	8.54 - 9.33	14.57
I	K	L	M	U	X	Y	Z
0.51	4.02 - 4.80	9.06	0.98	1/2" NPT	ø0.35x0.55 slot	1-5/16"-12 (F)	SAE 16

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

INDUSTRIAL COOLERS

SC Series - AC Motor Drive

Air Cooled Oil Coolers



Features

The SC Series cooler design uses a radial blower wheel to pull air through the heat exchanger and then exit from the top. This allows for excellent cooling capacity as well as low noise.

- Up to 16 HP cooling capacity
- Highly efficient and rugged bar-and-plate style heat exchangers
- Externally mounted heat exchangers for easy maintenance and cleaning
- Modular pump and filter options for a plug and play fluid conditioning system
- Available with HYDAC MF, LPF and FLND series filters
- Accessories include: Thermostats (*adjustable and fixed*), Integrated Thermostatic bypass valves and pressure bypass valves.
- Packaged systems with pump flows ranging from 3.1 gpm to 12.75 gpm

Applications



Gearboxes



Industrial



Elevators



Power Generation



Pulp & Paper



Railways



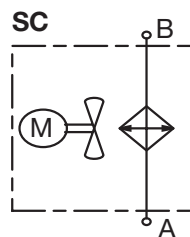
Shipbuilding



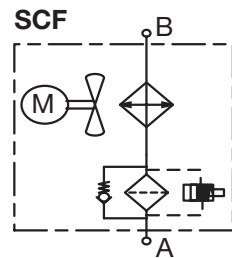
Steel / Heavy Industry

Hydraulic Symbol

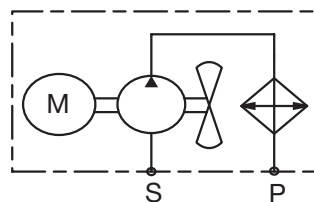
SC



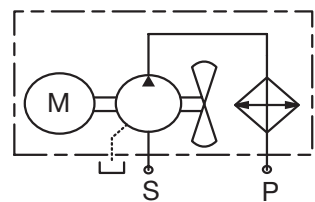
SCF



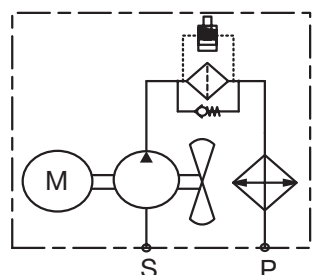
SCA 0-1



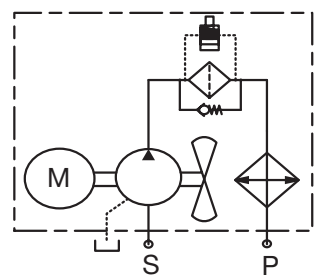
SCA 2-4



SCAF 0-1



SCAF 2-4



General

Materials	Housing: Welded steel housing, steel filter bracket, steel legs, steel blower wheel Heat Exchanger: Aluminum Heavy duty bar and plate Motors: TEFC, IEC Frame B5 Flange or NEMA frame style TEFC
Mounting Position	Horizontal, motor shaft
Maximum Pressure	w/o Pump: 230 psi (16 bar) Dynamic 290 psi (20 bar) Static with Pump: 90 psi (6 BAR)*
Fluids	Mineral oil to DIN 51524 Part 1 and 2 <i>(Contact factory for other fluid usages)</i>
Contamination Limit	Permissible contamination < NAS 12
Max Viscosity	w/o Pump: 2000 cst with Pump: 180 cst
Ambient Temperature	50°F (10°C) to 104°F (40°C)
Maximum Oil Temperature	w/o Pump: 266°F (130°C) with Pump: 175°F (80°C)
Air Flow Direction	Pulled across Heat Exchanger

Technical Specifications

Model	Description	Max. Oil Flow Rate (gpm)	Fluid Specifications		Noise (dBa @ 1 m)	Motor Specifications		
			Pump Displacement - Flow Rate			Motor Spec Fan (hp)	Motor Spec Fan/ Pump (hp)	Motor Spec (rpm)
SC 0, SCF 0	Fan	16	N/A		68	0.21 (kW)	N/A	1800
SCA 0, SCAF 0	Fan/Pump	N/A	10 cc/rev - 4.75 gpm		70	N/A	0.43 (kW)	1800
SC 1L, SCF 1L	Fan	32	N/A		64	0.29 (kW)	N/A	1200
SCA 1L, SCAF 1L	Fan/Pump	N/A	10 cc/rev - 3.1 gpm		68	N/A	0.29 (kW)	1200
SC 1S, SCF 1S	Fan	32	N/A		69	0.29 (kW)	N/A	1800
SCA 1S, SCAF1S	Fan/Pump	N/A	10 cc/rev - 4.75 gpm		71	N/A	0.43 (kW)	1800
SC 2L, SCF 2L	Fan	32	N/A		66	0.43 (kW)	N/A	1200
SCA 2L, SCAF 2L	Fan/Pump	N/A	28 cc/rev - 8.45 gpm	40 cc/rev - 12 gpm	68	N/A	2.0	1200
SC 2S, SCF2S	Fan	32	N/A		76	0.63 (kW)	N/A	1800
SCA 2S, SCAF2S	Fan/Pump	N/A	28 cc/rev - 12.75 gpm	40cc N/A	77	N/A	3.0	1800
SC 3L, SCF 3L	Fan	42	N/A		73	1.0	N/A	1200
SCA 3L, SCAF3L	Fan/Pump	N/A	28 cc/rev - 8.45 gpm	40 cc/rev - 12 gpm	73	N/A	2.0	1200
SC 3S, SCF 3S	Fan	42	N/A		82	1.5	N/A	1800
SCA 3S, SCAF3S	Fan/Pump	N/A	28 cc/rev - 12.75 gpm	40cc N/A	84	N/A	3.0	1800
SC 4L, SCF 4L	Fan	42	N/A		73	1.0	N/A	1200
SCA 4L, SCAF 4L	Fan/Pump	N/A	28 cc/rev - 8.45 gpm	40 cc/rev - 12 gpm	73	N/A	2.0	1200
SC 4S, SCF 4S	Fan	42	N/A		82	1.5	N/A	1800
SCA 4S, SCAF 4S	Fan/Pump	N/A	28 cc/rev - 12.75 gpm	40cc N/A	84	N/A	3.0	1800

INDUSTRIAL COOLERS

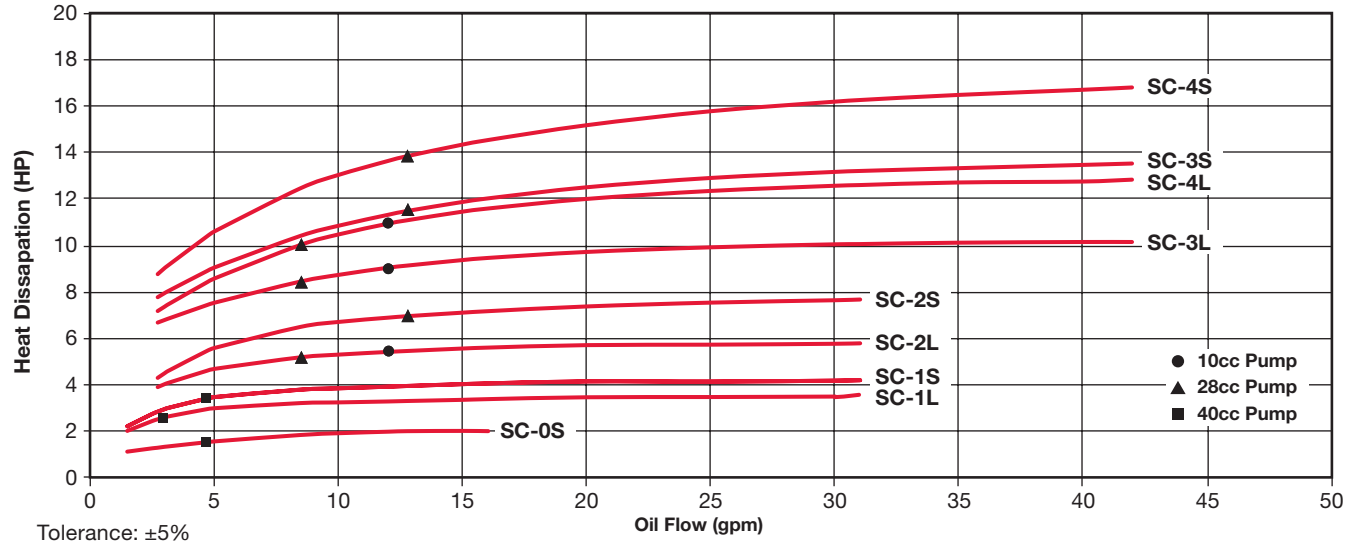
Model Code

	SCAF	3L	1.6	B	28	MF190	3	B	IBP	2	TS120
Model											
SC	=										
SCF	=										
SCA	=										
SCAF	=										
Size											
0S, 1L, 1S, 2L, 2S, 3L, 3S, 4L, 4S (Note: S = 1800 RPM, L = 1200 RPM)											
Modification Number (latest version supplied)											
Motor Voltage											
B	=										
C	=										
X	=										
Pump											
(omit)	=										
10	=										
28	=										
40	=										
Filter Type											
(omit)	=										
MF95	=										
MF190	=										
MF195	=										
LPF160	=										
LPF240	=										
FLND250	=										
Micron Rating											
(omit)	=										
3	=										
5	=										
6	=										
10	=										
20	=										
25	=										
Filter Indicator											
(omit)	=										
B	=										
C	=										
D24	=										
D115	=										
D230	=										
Accessories											
(omit)	=										
IBT	=										
IBP	=										
Opening Temperature (IBT Only)											
45	=										
50	=										
60	=										
Opening Pressure (IBT & IBP)											
2	=										
3	=										
4	=										
Temperature Switch											
TR1	=										
AITR	=										
TS-120	=										
TS-140	=										
TS-160	=										

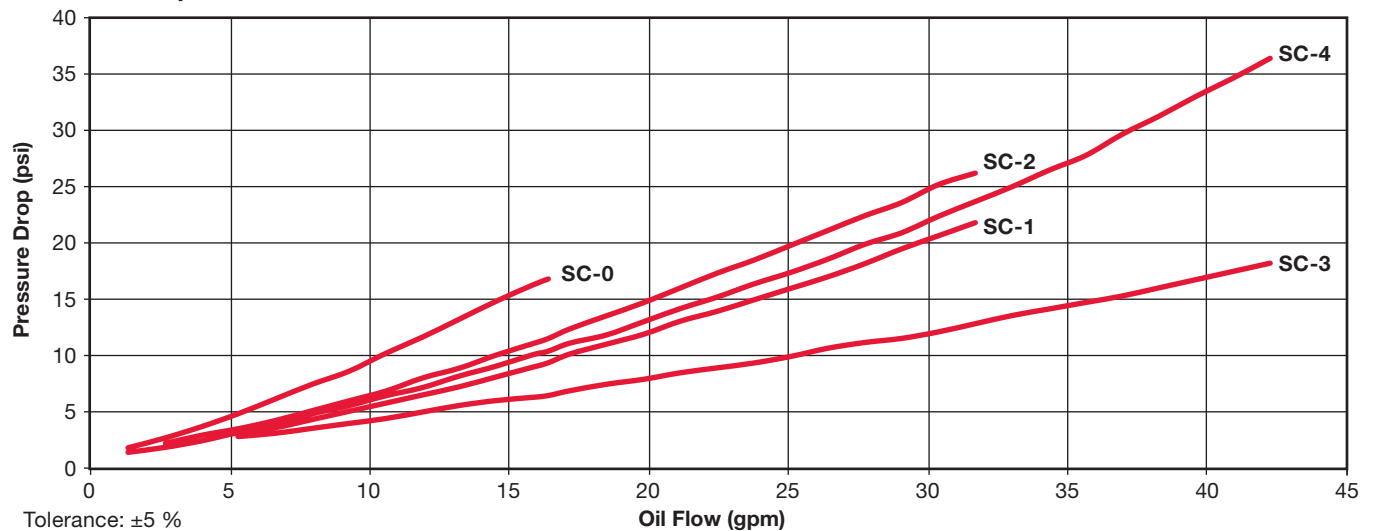
Preferred SCA Models	P/N
SCA1L1.5B10 SC	2592739
SCA2L1.6B40 SC	2950767
SCA3L2.6B40 SC	2598729

Model Codes containing RED are Options – Contact HYDAC Cooling Division for information and availability

Heat Dissipation @ $\Delta T = 40^\circ\text{F}$



Pressure Drop @ 30cSt



Note: Values measured at ΔT of 40°F , may vary at lower ΔT .

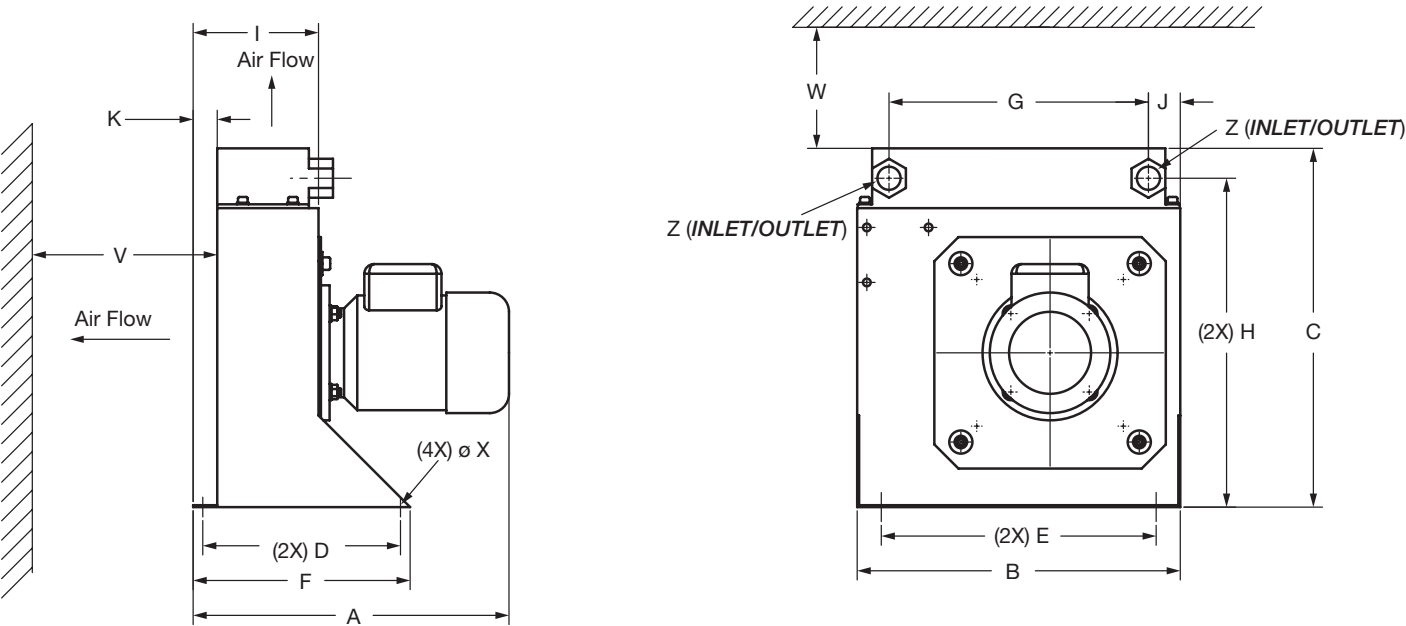
Pressure drop curves above use fluid viscosity of 30 cSt. For other viscosities the result must be multiplied by the K factors below.

K Factor Chart

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

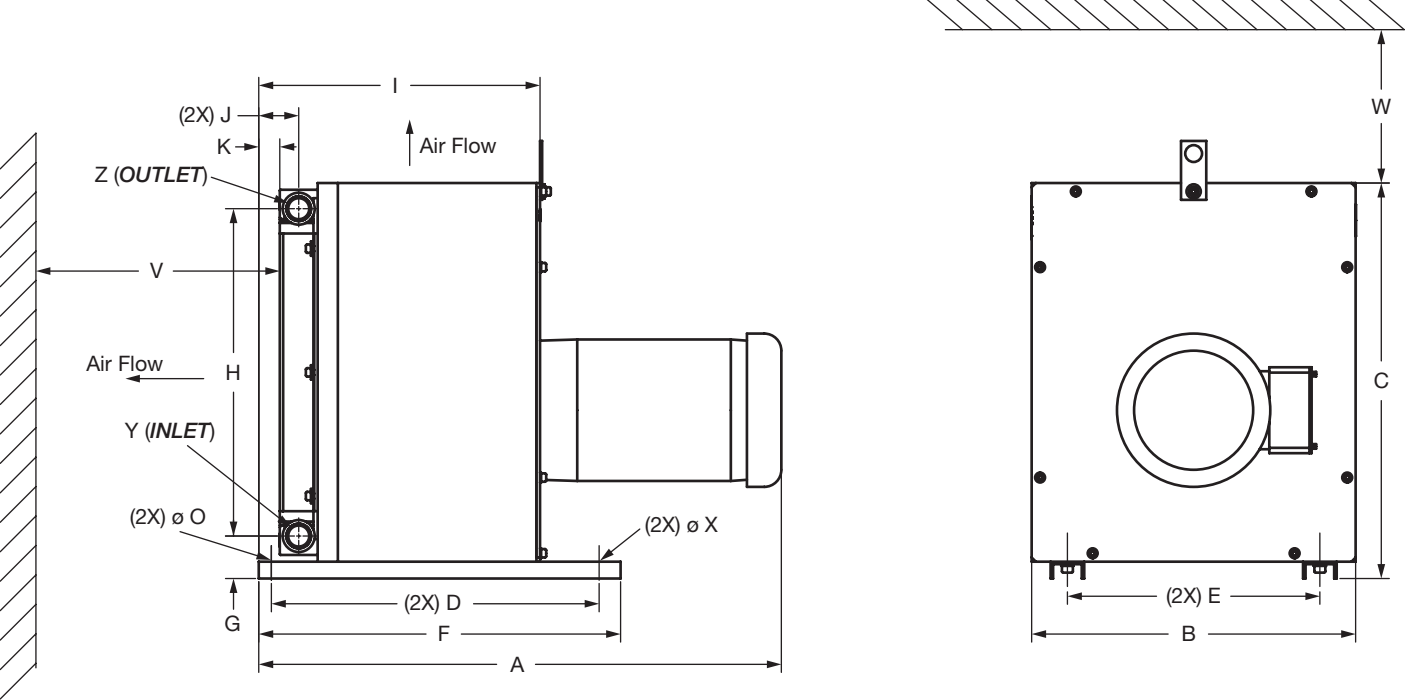
INDUSTRIAL COOLERS

Dimensions SC Size 0S



A	B	C	D	E	F	G	H	I	J	K	V	W	X	Z
12.89	13.19	14.65	8.07	11.22	8.86	10.59	13.43	5.12	1.30	0.98	7.87	31.50	ø0.35	SAE 12

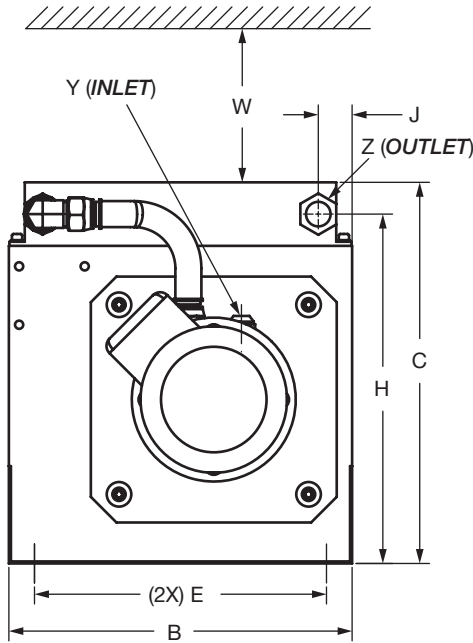
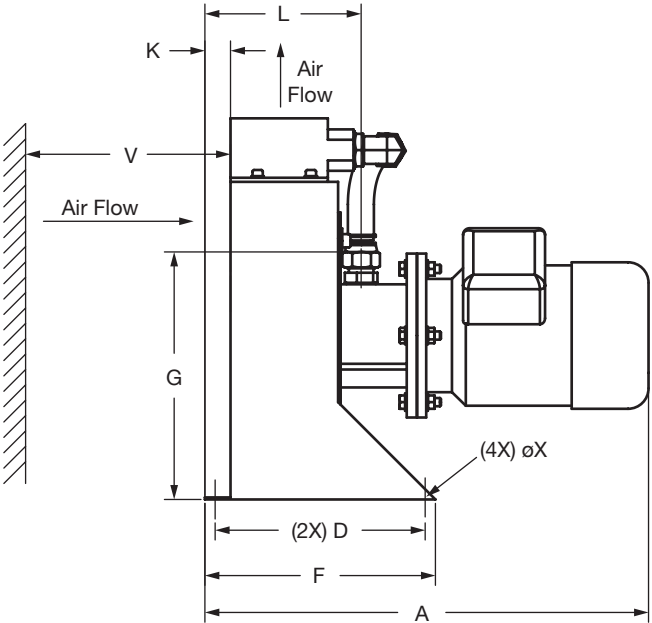
Dimensions SC Size 1 - 4 L, S



Size	A	B	C	D	E	F	G	H	I	J	K	O	V	W	X	Y	Z
SC1L,S	20.47	13.58	14.76	12.60	11.22	14.17	1.99	11.38	11.57	1.87	0.98	0.35	39.37	11.81	ø0.35x1.2 Slot	1-1/16"-12 (F)	SAE 12
SC2L,S	24.45	15.16	18.50	15.33	11.81	16.93	1.99	15.31	13.16	1.87	0.98	0.35	59.06	15.75	ø0.35x1.2 Slot	1-1/16"-12 (F)	SAE 12
SC3L,S	28.39	17.72	20.87	18.50	14.17	19.69	2.23	17.28	17.10	2.46	1.57	0.35	78.74	19.69	ø0.35x1.2 Slot	1-1/16"-12 (F)	SAE 12
SC4L,S	28.39	17.72	20.87	18.50	14.17	19.69	2.32	17.28	17.10	2.11	1.02	0.35	78.74	19.69	ø0.35x1.2 Slot	1-5/16"-12 (F)	SAE 16

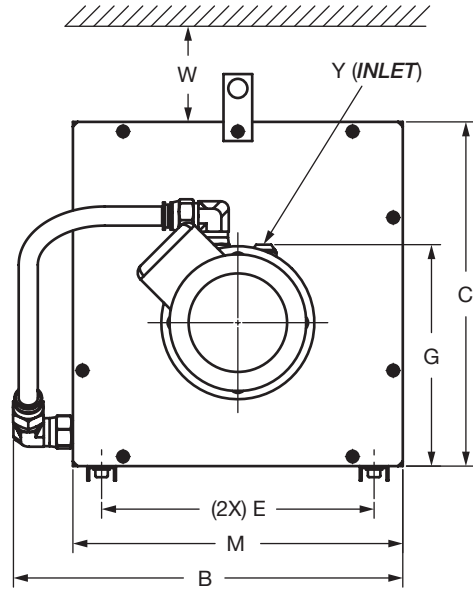
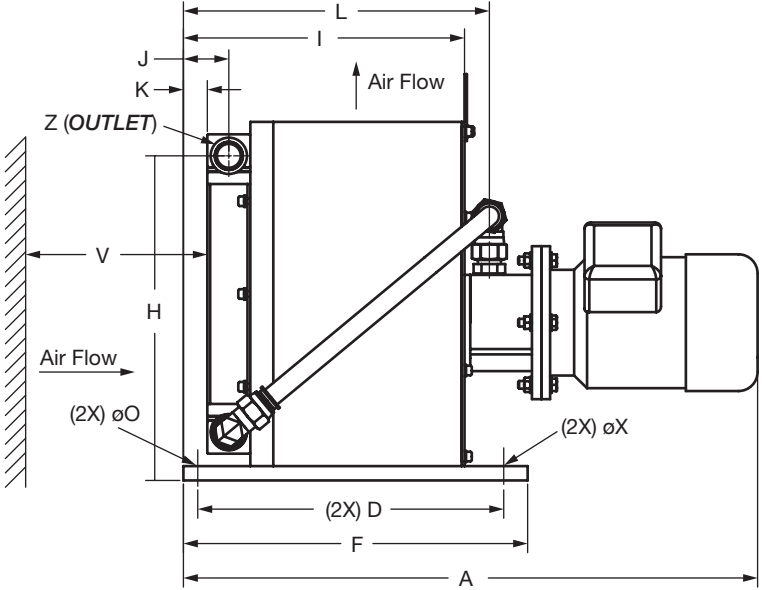
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches.

Dimensions
SCA Size 0S



A	B	C	D	E	F	G	H	J	K	L	V	W	X	Y	Z
17.05	13.19	14.65	8.07	11.22	8.86	9.51	13.43	1.30	0.98	6.00	7.87	31.50	ø0.35	1 1/16"-12 JIC-12 (M)	SAE 12

Dimensions
SCA Size 1 L, S

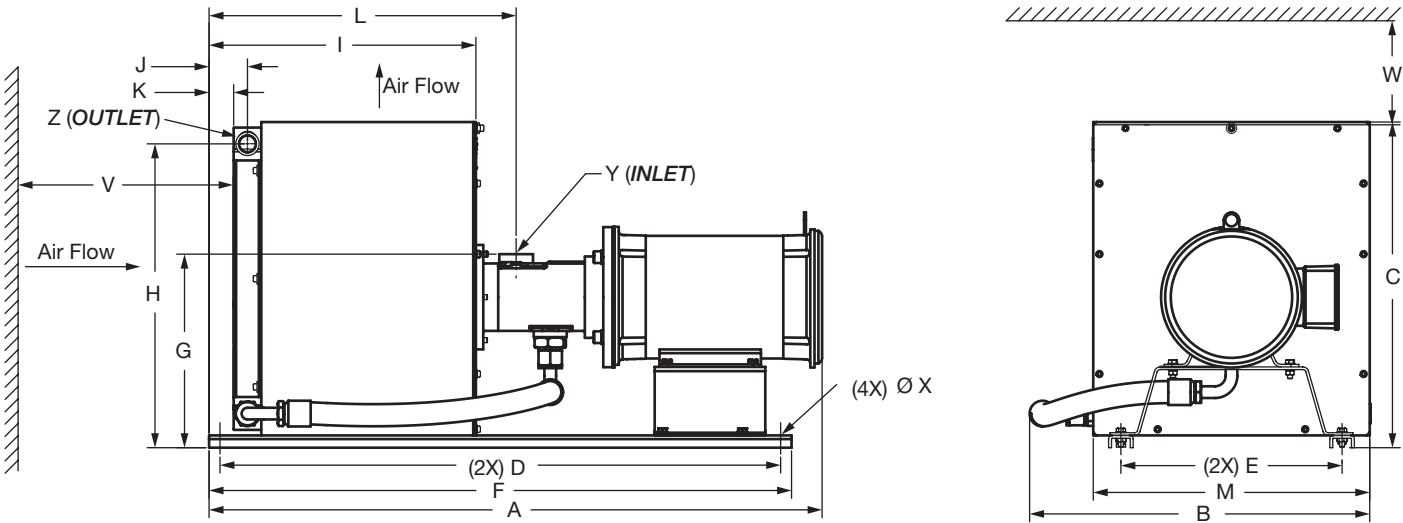


A	B	C	D	E	F	G	H	I	J
23.64	16.03	14.76	12.6	11.22	14.17	9.71	13.37	11.57	1.87

K	L	M	O	V	W	X	Y	Z
0.98	12.6	13.58	ø0.35	11.81	39.37	ø0.35x1.18 slot	1 1/16"-12 JIC-12 (M)	SAE 12

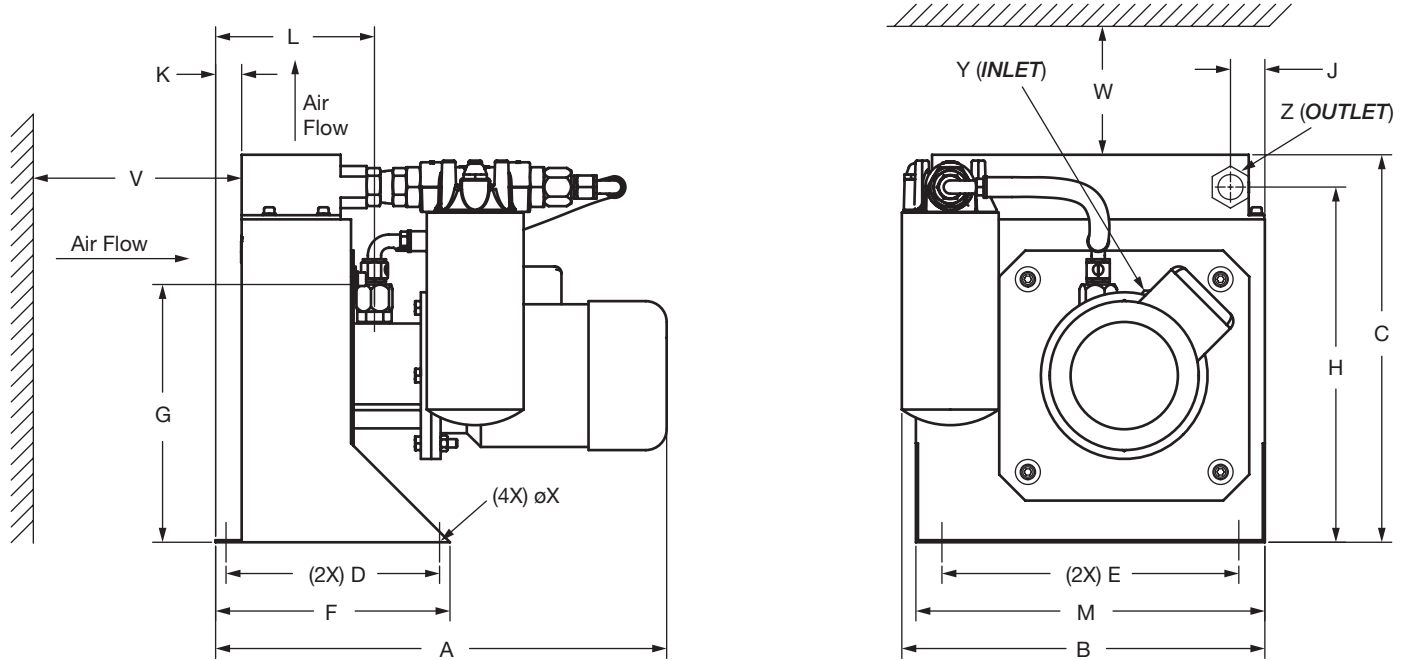
INDUSTRIAL COOLERS

Dimensions SCA Size 2 - 4 S



Size	A	B	C	D	E	F	G	H	I	J	K	L	M	V	W	X	Y	Z
SCA2L,SB28	36.76	19.04	18.50	32.31	11.81	33.92	9.84	17.30	14.31	2.99	2.10	16.36	15.16	15.75	59.06	ø0.35x1.18 Slot	SAE 16	SAE 12
SCA2LB40	38.27	19.04	18.50	32.31	11.81	33.92	10.63	17.30	14.31	2.99	2.10	16.89	15.16	15.75	59.06	ø0.35x1.18 Slot	SAE 24	SAE 12
SCA3L,SB28	40.12	21.73	20.87	35.94	14.17	37.92	11.61	19.45	17.69	3.05	2.17	19.74	17.72	19.69	78.74	ø0.35x1.56 Slot	SAE 16	SAE 12
SCA3LB40	41.63	21.73	20.87	35.94	14.17	37.92	12.40	19.45	17.69	3.05	2.17	20.27	17.72	19.69	78.74	ø0.35x1.56 Slot	SAE 24	SAE 12
SCA4L,SB28	40.12	21.73	20.87	35.94	14.17	37.92	11.61	19.61	17.69	2.70	1.46	19.74	17.72	19.69	78.74	ø0.35x1.56 Slot	SAE 16	SAE 16
SCA4LB40	41.63	21.73	20.87	35.94	14.17	37.92	12.40	19.61	17.69	2.70	1.46	20.27	17.72	19.69	78.74	ø0.35x1.56 Slot	SAE 24	SAE 16

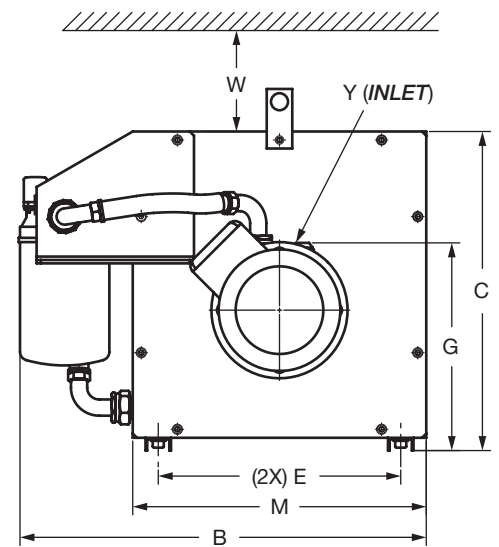
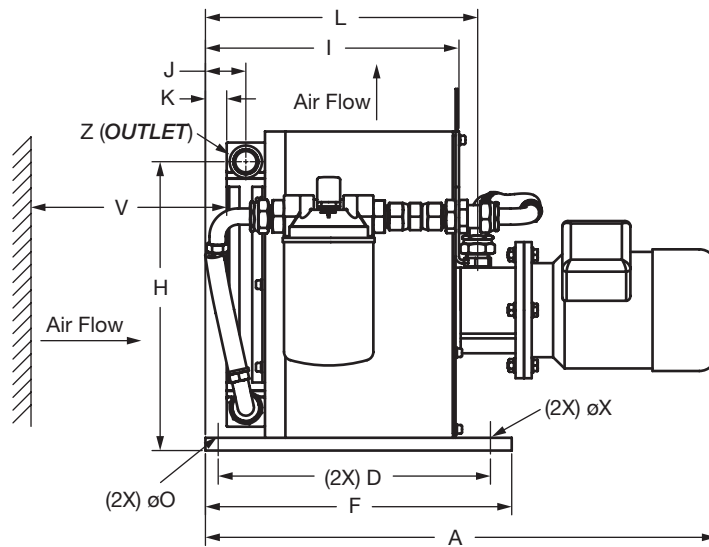
Dimensions SCAF Size 0 S



A	B	C	D	E	F	G	H	J	K	L	M	V	W	X	Y	Z
17.05	13.72	14.65	8.07	11.22	8.86	9.51	13.43	1.30	0.98	6.00	13.19	7.87	31.50	ø0.35	1 1/16"-12 JIC-12 (M)	SAE 12

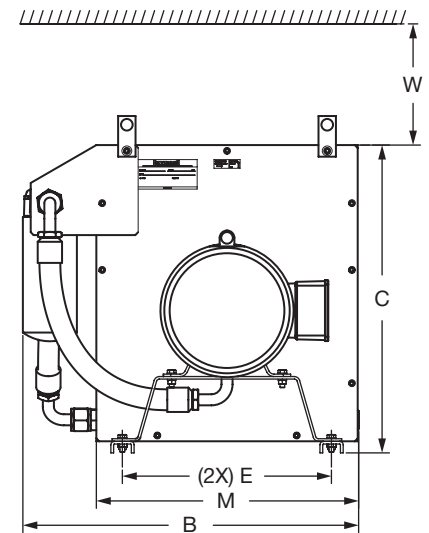
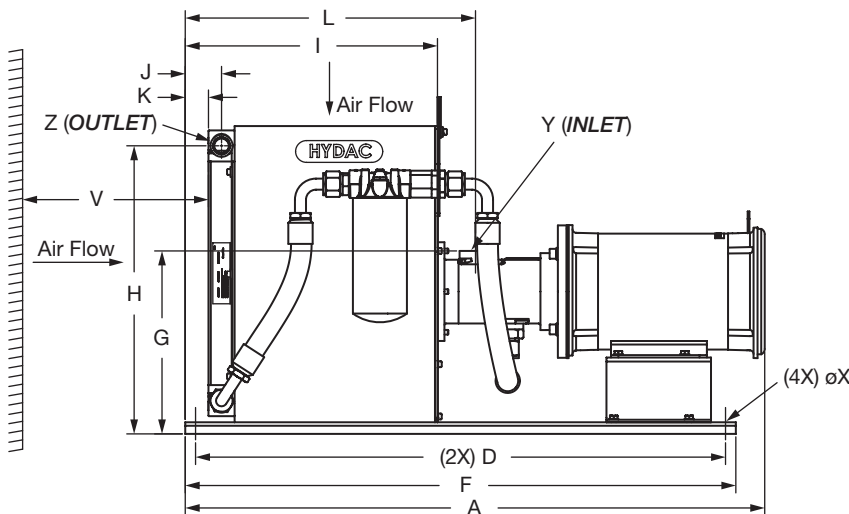
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches.

Dimensions SCAF Size 1 L, S



A	B	C	D	E	F	G	H	I	J	K	L	M	O	V	W	X	Y	Z
23.64	18.80	14.76	12.60	11.22	14.17	9.71	13.37	11.57	1.87	0.98	12.60	13.58	ø0.35	11.81	39.37	ø0.35x1.18 slot	1 1/16"-12 JIC-12 (M)	SAE 12

Dimensions SCAF Size 2 - 4 S



Size	A	B	C	D	E	F	G	H	I	J	K	L	M	V	W	X	Y	Z
SCAF2L, SB28	36.76	20.14	18.50	32.31	11.81	33.92	9.84	17.30	14.31	2.99	2.10	16.36	15.16	15.75	59.06	ø0.35x1.18 Slot	SAE 16	SAE 12
SCAF2LB40	38.27	20.14	18.50	32.31	11.81	33.92	10.63	17.30	14.31	2.99	2.10	16.89	15.16	15.75	59.06	ø0.35x1.18 Slot	SAE 24	SAE 12
SCAF3L, SB28	40.12	23.37	20.87	35.94	14.17	37.92	11.61	19.45	17.69	3.05	2.17	19.74	17.72	19.69	78.70	ø0.35x1.56 Slot	SAE 16	SAE 12
SCAF3LB40	41.63	23.37	20.87	35.94	14.17	37.92	12.40	19.45	17.69	3.05	2.17	20.27	17.72	19.69	78.70	ø0.35x1.56 Slot	SAE 24	SAE 12
SCAF4L, SB28	40.12	23.37	20.87	35.94	14.17	37.92	11.61	19.61	17.69	2.70	1.46	19.74	17.72	19.69	78.70	ø0.35x1.56 Slot	SAE 16	SAE 16
SCAF4LB40	41.63	23.37	20.87	35.94	14.17	37.92	12.40	19.61	17.69	2.70	1.46	20.27	17.72	19.69	78.70	ø0.35x1.56 Slot	SAE 24	SAE 16

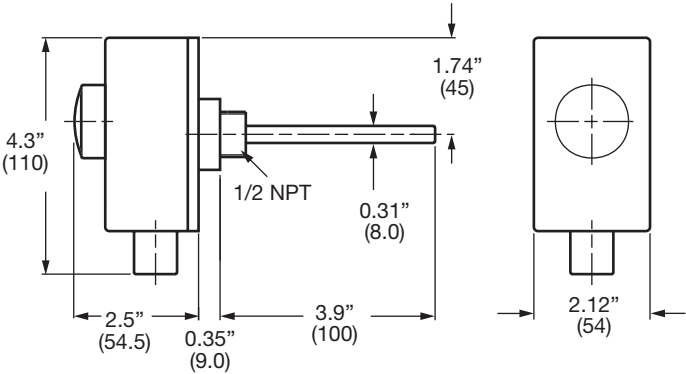
Dimensions are for general information only, all critical dimensions should be verified by requesting a certified print. Dimensions are in inches.

INDUSTRIAL COOLERS

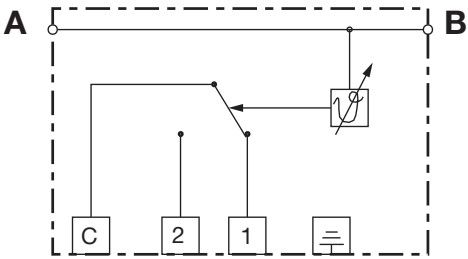
Air Cooled Accessories

TR1 Series

Adjustable Temperature Switch - Tank Mounted



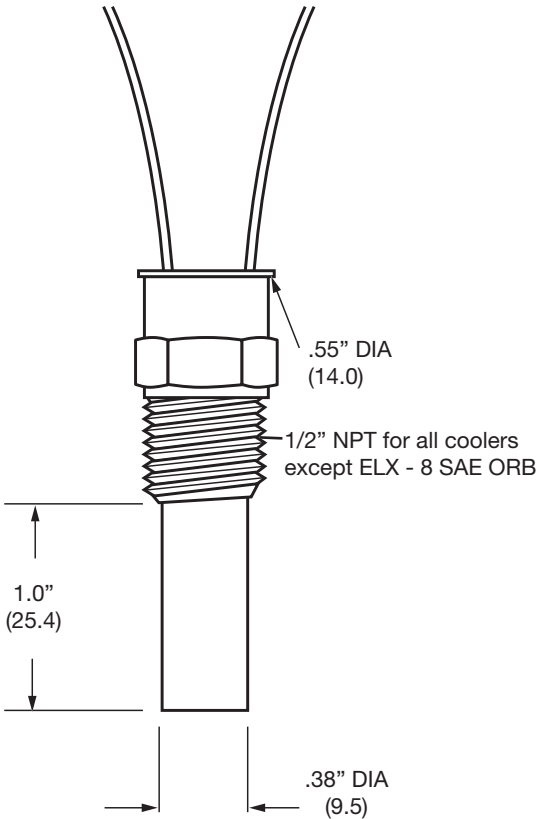
Hydraulic Symbol



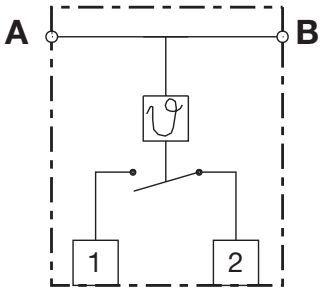
TR1/AITR Adjustable Thermostat

Temperature Range	0 to 200° F (0 to 95° C)
Switching Differential	5°F (2.5° C)
Voltage	220V/440V
Amps	10A/220V 5A/440V
Enclosure	IP50
Conduit Connector	1/2"
Max. psi	150

TS Series



Hydraulic Symbol

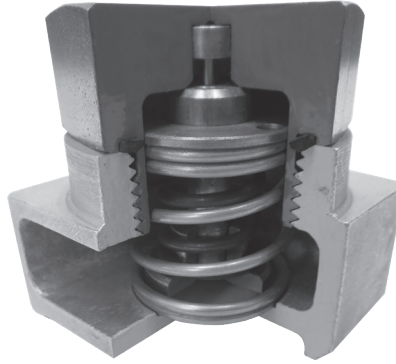


TS Technical Data

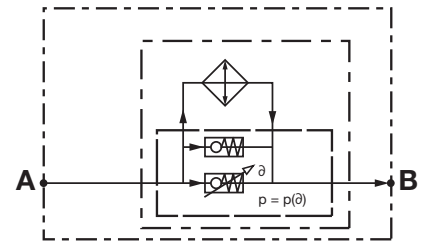
Voltage	12/24 VDC 120/220/440V
Amps	6A / 120V, 3A / 240V, 4A / 12VDC, 2A / 24VDC
Accuracy	±3%

Bypass

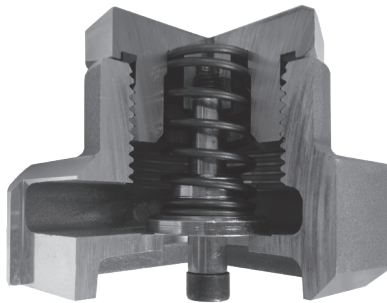
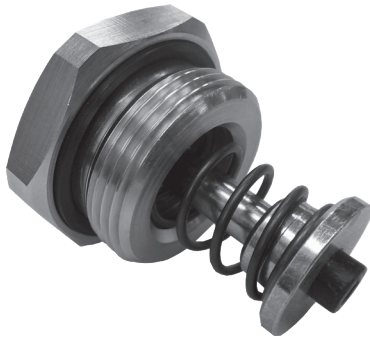
IBT Thermostatic Bypass



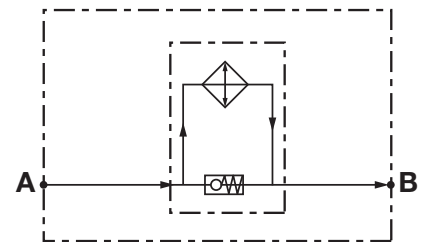
Hydraulic Symbol



IBP Integrated Bypass



Hydraulic Symbol



Model Code

Model

- IBT = thermostatic bypass valve
- IBP = integrated 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

2	= 2 bar (29 psi) (standard pressure for IBT)
3	= 3 bar (45 psi)
4	= 4 bar (58 psi) (IBP only)

IBT 45 / 3



Features

- Fixed setting temperature valve
- Precise Temperature control
- Low pressure drop
- Shock resistant
- Can function in any position
- Maximum pressure 230 psi (16 bar)
- Maintenance-free

Warning:

These valves are added to a bypass version cooling element in conjunction with a flow channel that is brazed into the original construction.

INDUSTRIAL COOLERS

HEX Series

Plate Heat Exchangers



Description

Heat exchangers are used to exchange heat between two fluids. Plate heat exchangers are high performance components and provide a high level of efficiency combined with compact dimensions and low weight. Their efficiency reduces the amount of cooling water required for heat transfer which results in low operating costs.

Features

Plates and connections are manufactured from stainless steel to AISI 316, 1.4401, vacuum-brazed with copper. The special molding of the plates produces the turbulent flow necessary for effective heat transfer and provides the plate heat exchanger with a high level of mechanical strength. Nickel brazed option available.

Applications



Agricultural



Automotive



Construction



Gearboxes



Industrial



Elevators



Commercial
Municipal



Power
Generation



Pulp & Paper



Railways

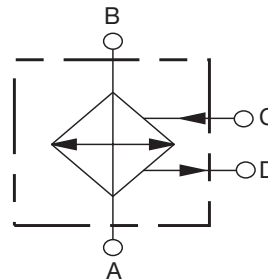


Shipbuilding



Steel / Heavy
Industry

Hydraulic Symbol



Operating Details

Medium:

- Water glycol (*coolants*)
- HFC operating fluids
- Water
- Oil

Contamination:

The quantity of particles in suspension should be less than 10 mg/l.
Particle size < 0.6 mm (*spherical*).

Thread-like particles cause a rapid rise in pressure drops.

Temperature Range:

- 50° to 437°F (10° to 225°C)
(freezing point and boiling point must be taken into consideration!)

Pressure:

- max. 435 psi (30bar) (*static*)
- Test pressure: 650 psi

Corrosion:

The following limits refer to a pH value of 7

- free chlorine, CL₂ < 0.5 ppm
- chloride ions CL
< 700 ppm at 20 °C
< 200 ppm at 50 °C

Other Limits:

- pH 7 – 10
- sulphate SO₄ 2- < 100 ppm
- [H CO₃ -] / [SO₄ 2-] > 1
- ammonia, NH₃ < 10 ppm
- free CO < 10 ppm

The following ions are not corrosive under normal conditions:
phosphate, nitrate, nitrite, iron, manganese, sodium and potassium

Model Code

HEX 610 - 10 NPT

Series

HEX 610
HEX 615
HEX 722

Number of Plates

	10	20	30	40	50	60	70	80	100	120	150
610	x	x	x	x	x	x	x	x	x	x	x
615	x	x	x	x	x	x	x	x	x	x	x
722		x	x	x	x	x	x	x	x	x	x

(Other number of plates available - consult factory.)

Port Type

NPT = 610 + 615 series w/ 1" NPT: 422 series w/ 1-1/2" NPT
G = 610 + 615 series w/ G1" : 422 series w/ G1-1/2"

(Other port types available - consult factory.)

Mounting brackets must be ordered separately.

Note: Pipes must be connected so that connections are stress free. Linear expansion and vibrations from the pipes to the heat exchanger must be avoided.

Preferred HEX Models	P/N
HEX 610-10 NPT QS	2582225
HEX 610-100 NPT QS	2582232
HEX 610-20 NPT QS	2582226
HEX 610-30 NPT QS	2582227
HEX 610-40 NPT QS	2582228
HEX 610-50 NPT QS	2582229
HEX 610-60 NPT QS	2582230
HEX 615-20 NPT QS	2582235
HEX 615-30 NPT QS	2582236
HEX 615-40 NPT QS	2582237
HEX 615-50 NPT QS	2582238
HEX 615-60 NPT QS	2582239
HEX 615-80 NPT QS	2582240

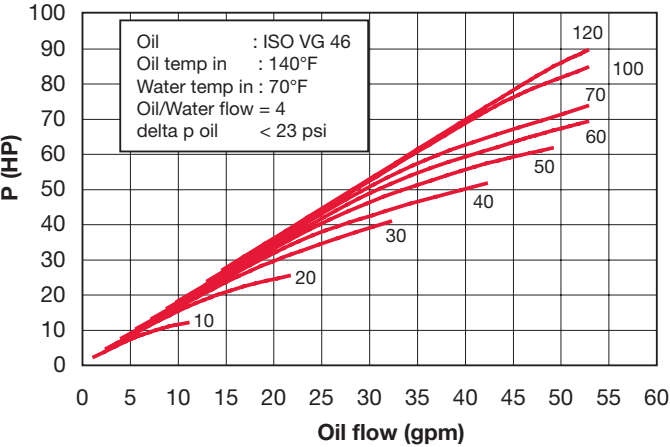
Pressure Drop Across Heat Exchanger

This table is based on an ISO VG45 oil at 130°F and shows the pump flows with the 1,800 RPM motors. If other grades of oil are to be used, consult the sizing software. When using the 72 psi clogging indicator the pressure drop should not exceed 15 psi max across the heat exchanger. When using the 29 psi clogging indicator the pressure drop should not exceed 30 psi max across the heat exchanger.

Heat Exchanger Size	Pump 3.5 1.6 gpm (6.3 l/min)	Pump 7 3.3 gpm (12.6 l/min)	Pump 10 4.75 gpm (18 l/min)	Pump 15 7 gpm (18 l/min)	Pump 20 9.5 gpm (18 l/min)	Pump 30 14.5 gpm (55 l/min)	Pump 40 18.5 gpm (70 l/min)	Pump 50 23.5 gpm (90 l/min)	Pump 70 34 gpm (130 l/min)	Pump 100 47.5 gpm (180 l/min)
610-10	3	5	8	-	-	-	-	-	-	-
610-20	1	2	3	5	7	13.66	-	-	-	-
610-40	-	-	-	2	3	7.35	9.85	13.4	-	-
610-50	-	-	-	-	-	5.64	7.54	10.27	16.19	-
610-70	-	-	-	-	-	4.1	5.2	7	11.1	16.8
610-100	-	-	-	-	-	3	3.8	4.9	7.6	11.66
610-120	-	-	-	-	-	2.55	3.25	4.2	6.35	9.8
615-10	4	9	15	-	-	-	-	-	-	-
615-20	2	3.3	5	9	13	-	-	-	-	-
615-40	-	-	-	4	5	13.25	17.8	-	-	-
615-60	-	-	-	-	-	8.15	10.8	14.75	-	-
615-80	-	-	-	-	-	5.95	7.75	10.5	16.6	-

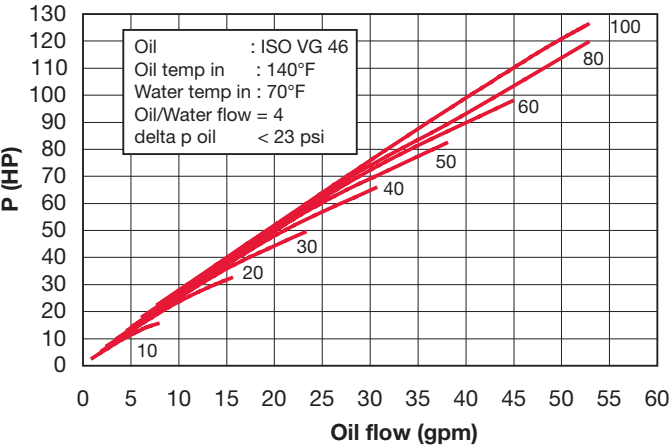
INDUSTRIAL COOLERS

Technical Data HEX Size 610



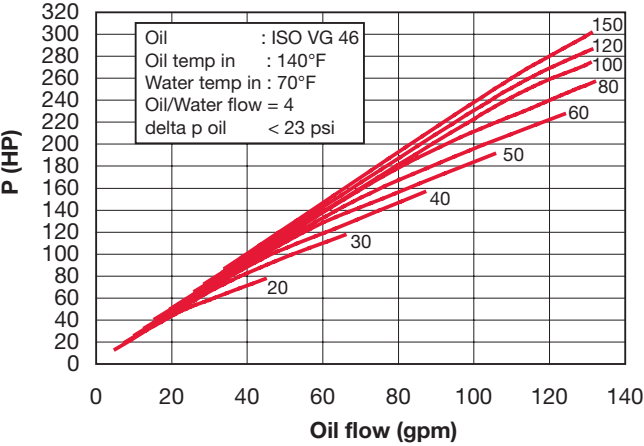
Number of plates (N)	H = 10 + Nx2.4 (mm)	lbs
10	34	5.5
20	58	8.4
30	82	11.2
40	106	14.0
50	130	17.0
60	154	19.8
70	178	22.6
100	250	31.2
120	298	37.0

HEX Size 615



Number of plates (N)	H = 10 + Nx2.4 (mm)	lbs
10	34	9.2
20	58	14.3
30	82	19.4
40	106	24.4
50	130	29.7
60	154	35.5
80	202	44.6

HEX Size 422



Number of plates (N)	H = 10 + Nx2.85 (mm)	lbs
20	67	34.7
30	95.5	44.5
40	124	54.1
50	152.5	63.8
60	181	73.5
80	238	92.8
100	295	112.2

The cooling capacity is also dependent on the viscosity class. At a lower viscosity class the cooling capacity increases, at a higher viscosity class it decreases. In order to make an accurate calculation, the following details are required:

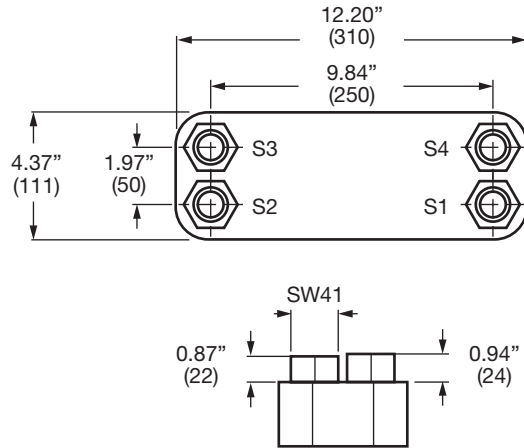
- type of oil
- permissible tank temperature
- required outlet temperature of the oil or necessary cooling capacity
- inlet temperature of the water and maximum water quantity

Selection Program

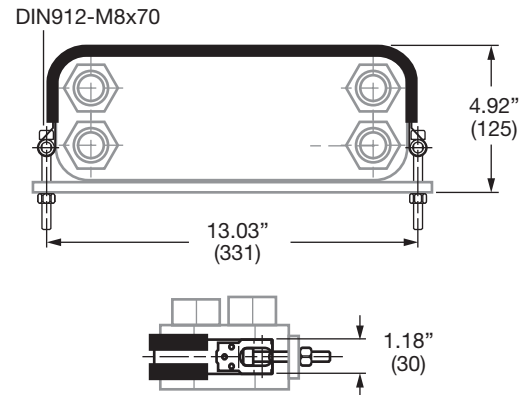
The cooler selection program calculates the correct heat exchanger in the case of non-standard operating data.

Please contact HYDAC Product Group - Cooling System Division

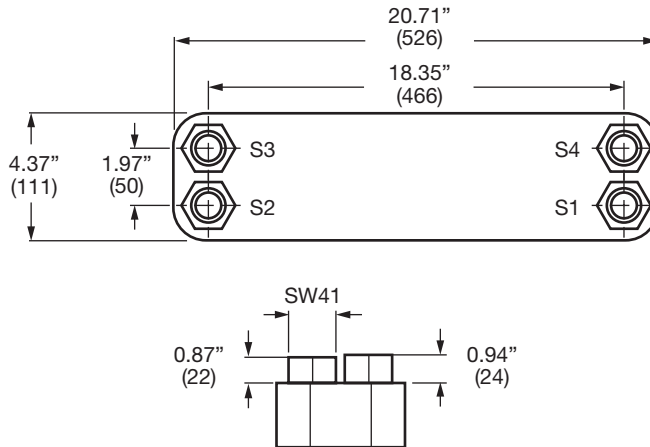
Dimensions HEX Size 610



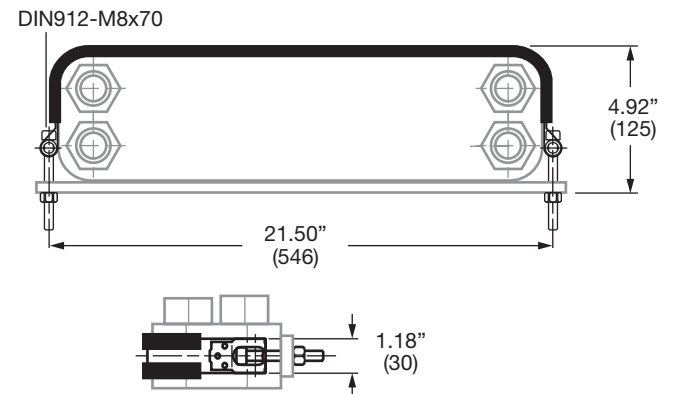
Mounting Bracket (PN 268524)



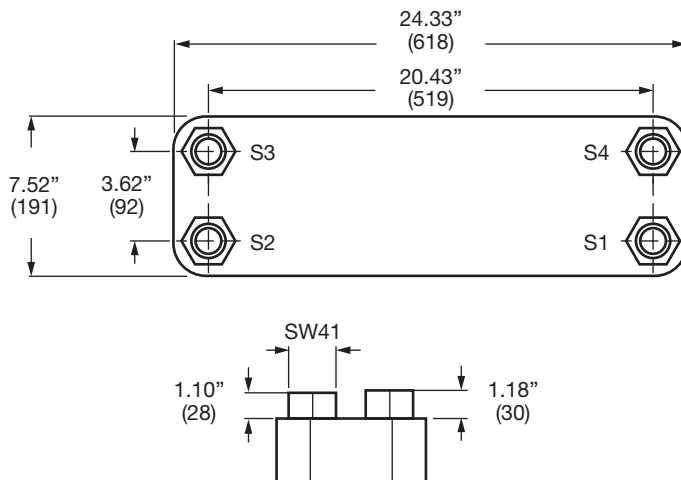
HEX Size 615



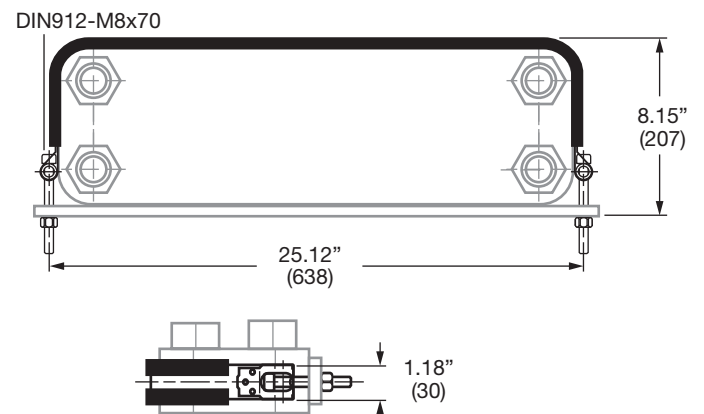
Mounting Bracket (PN 3014029)



HEX Size 722



Mounting Bracket (PN 3013884)



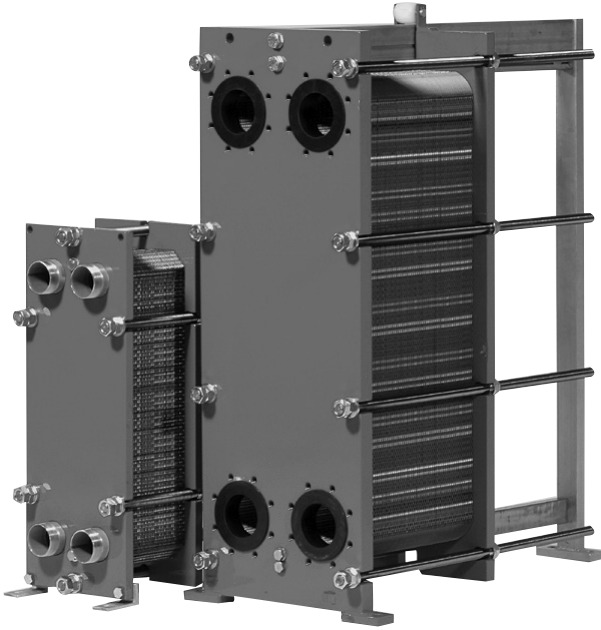
Please note: For mounting heat exchangers with 60 plates and above, two clamps are recommended.

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

INDUSTRIAL COOLERS

H Series

Plate Heat Exchangers



Description

Heat exchangers are used to transfer heat between two media. Gasketed plate heat exchangers are high performance components and provide a high level of efficiency combined with compact dimensions. They also have a high degree of flexibility. For higher capacity ranges this series is a useful supplement to the brazed version.

Features

The gasketed plate heat exchanger consists of a pack of individual, embossed heat transfer plates made of stainless steel 1.4401 (AISI 316), 1.4306 (AISI 304). The plates are sealed and the media kept separate by using gaskets in nitrile rubber (NBR) or optionally FKM (Viton) or EPDM.

The plate pack is installed in a frame which consists of a fixed plate and a pressure plate, tightening bolts and supports. There are several sizes with different numbers of plates available to cover the capacity range.

The heat exchanger is connected inline via threaded or flange connections. Depending on the application, special models are available with higher grade materials (Titanium). For such applications, please contact the relevant department.

Applications



Industrial



Elevators



Gearboxes



Power Generation



Pulp & Paper



Railways

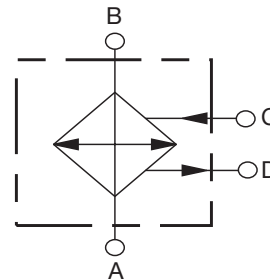


Shipbuilding



Steel / Heavy Industry

Hydraulic Symbol



Operating Details

Fluids:

- Water glycol (*coolants*)
- HFC operating fluids
- Water
- Oil

Contamination:

The quantity of particles in suspension should be less than 10 mg/l. Particle size < 0.6 mm (*spherical*).

Thread-like particles cause a rapid rise in pressure drops.

Temperature Range:

- max. 284°F (140°C)

Pressure:

- max. 145 psi (10 bar)
- max. 232 psi (16 bar)
- max. 363 psi (25 bar)

Note: Pressure surges must be avoided.

- For cooling circuits in reverse flow which can be operated using water, coolants, HFC operating fluids or oils.

For applications using other media, please contact HYDAC Product Group - Cooling Systems Division.

Model Code

		H38 - IG	10 - 12	TKTM	33 - LIQUID
Series					
H2, H8, H14, H16, H18, H28, H38, H40, H42, H44, H62, H82, H84, H94, H128, H172, H220					
Carbon Steel Frame Type					
IG	= For sizes H8A, H16A, H18A, H38A, H62A, H42A, H44, H94 and H128				
IS	= For sizes H42, H94, H128 (ASME and length above 1300 mm), H82, H46, H162				
ST	= For sizes H14A, H28A, H40A				
Working Pressure					
10	= 150 psi				
16	= 232 psi				
25	= 362 psi				
Number of Plates					
XX	= Number of plates				
Plate Design					
TMTL	= Plate configuration				
TL	= Thermal long				
TK	= Thermal short				
TM	= Thermal mix i.e TL + TK				
TMTL	= Thermal long + Thermal mix				
TKTM	= Thermal mix + Thermal short				
TX	= Thermal long + Thermal X				
XX	% of last plate configuration (example: TMTL80 = 80% Thermal long + 20% Thermal mix)				
Thermal Length					
Liquid					

Consult factory for sizing.

Corrosion Limits

Water Ingredient	Concentration of Ingredient in mg/l	Advice 1.4401
Aluminium (Al) – in Solution	< 0.2 / > 0.2	A / A
Ammonia (NH3)	< 2 / 2 – 20 / > 20	A / A / A
Chlorides (Cl)- (max. 60°C)	< 250 / > 250	A / B
Electric Conductivity	< 10 µ S/cm / 10 – 500 µ S/cm / > 500 µ S/cm	A / A / A
Iron (Fe) – in Solution	< 0.2 / > 0.2	A / A
Free Aggressive Carbonic Acid (CO2)	< 5 / 5 – 20 / > 20	A / A / A
Total Hardness	4.0 – 8.5°dH	A
Glycol Content	< 20% / 20 – 50 / > 50%	A / A / A
HCO3 SO4-2	< 1.0 / > 1.0	A / A
Hydrocarbonate HCO3	< 70 / 70 – 300 / > 300	A / A / A
Manganese (Mn) – in Solution	< 0.1 / > 0.1	A / A
Nitrate – in Solution NO3	< 100 / > 100	A / A
pH-Value	< 6 / 6.0 – 7.5 / 7.5 – 9.0 / > 9	B / A/B / A / A
Sulfate SO42-	< 70 / 70 – 300 / > 300	A / A / C
Sulfite So3 / Freies Chlorgas Cl2	< 1 / 1 – 5 / > 5	A / A / A/B
Hydrosulfide H2S	< 0.05 / > 0.05	A / A

A = Under normal conditions good consistency
 B = Subject to corrosion, especially if several substances with B
 C = Unsuitable

Other Limits

Chloride Content	max. Temperature of Wall Surface			
	140°F (60°C)	176°F (80°C)	248°F (120°C)	266°F (130°C)
≤ 10 ppm	304 SS	304 SS	304 SS	316 SS
≤ 25 ppm	304 SS	304 SS	316 SS	316 SS
≤ 50 ppm	304 SS	316 SS	316 SS	Titan
≤ 80 ppm	316 SS	316 SS	316 SS	Titan
≤ 150 ppm	316 SS	316 SS	Titan	Titan
≤ 300 ppm	316 SS	Titan	Titan	Titan
> 300 ppm	Titan	Titan	Titan	Titan

INDUSTRIAL COOLERS

Gasketed Plate Heat Exchanger

Technical Data Inquiry Sheet

For Internal Use Only

Project Responsibility _____

Date _____

Customer Information

Name _____

Title _____

Company _____

E-mail _____

Address _____

State _____ Zip _____

Phone _____

Fax _____

Application

Sizing Data

	Unit of Measurement	Hot Side	Cold Side
Power Dissipation _____	_____	_____	_____
Fluid _____	_____	_____	_____
State of Aggregation _____	_____	_____	_____
Flow Rate _____	_____	_____	_____
Inlet Temperature _____	_____	_____	_____
Outlet Temperature _____	_____	_____	_____
Permissible Pressure Drop _____	_____	_____	_____
Density _____	_____	_____	_____
Specific Heat Capacity _____	_____	_____	_____
Thermal Conductivity _____	_____	_____	_____
Viscosity _____	_____	_____	_____
Operating Pressure _____	_____	_____	_____
Design Pressure _____	_____	_____	_____
Test Pressure _____	_____	_____	_____
Design Temperature _____	_____	_____	_____

Design

Type of Construction _____

Material _____

Plates _____

Gaskets _____

Miscellaneous

Notes



Comparing Heat Exchanger Performance from HYDAC to other Manufacturers

Not all heat exchangers are rated the same way, especially in terms of heat transfer performance. This guide will help you do a quick comparison all by yourself, essentially allowing you to compare ours to theirs, apples-to-apples.

Definitions:

- HP = horsepower in terms of the amount of heat transferred (this can be converted to other units of measure, like Btu/min, Btu/hr, kW, etc.)
- ETD = Entering Temperature Differential, hot oil inlet temp minus air inlet temp
- Heat transfer curve is simply a rating of a heat exchanger at various flow rates

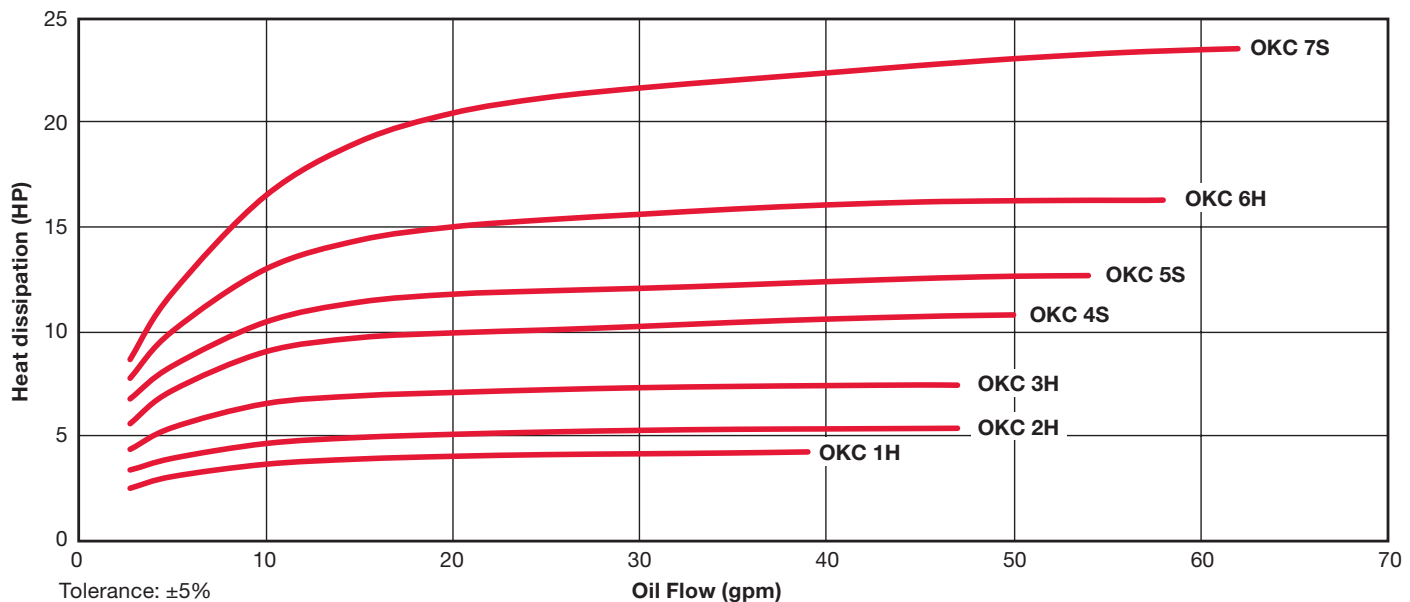
HYDAC rates the industrial coolers at 40°F ETD. This means the oil inlet temp is 40°F hotter than the air inlet temp. We rate the ELD and ELH cooler at 72°F ETD. We rate the ELX series at 100°F ETD to make it easier to compare to our competitors who also rate at 100°F ETD. They are rated differently, but it does not have to be confusing.

Adjusting the HP rating to a different ETD is a simple ratio. You can ratio up or down.

Example:

Based on the OKC Series Heat Dissipation chart below, our OKC 4S has a rating of 10HP at 40°F ETD at 20 gpm oil flow (it is an easy point to find on the chart). This rating can be stated at a higher (or lower) ETD. For instance, if the competitors chart is at 50°F ETD, you can adjust the OKC 4S rating: $10\text{HP} \div 40^\circ\text{F} \times 50^\circ\text{F} = 12.5\text{HP}$. Therefore, the new OKC 4S rating is 12.5HP at 50°F ETD at 20 gpm. This can be compared to the competitor's cooler rated at 50°F ETD.

Heat Dissipation @ $\Delta T = 40^\circ\text{F}$



Cooling capacity is dependent on the oil flow rate and the temperature difference ΔT between oil inlet and air inlet.

Competitive Crossovers

OKC / OK / ELD / ELH Series

HYDAC	Thermal Transfer	AKG®1	Parker-Hannifin®2 (Olaer®3, Oil Air)	American Industrial	Hayden®4
OKC-1H	AO5	–	–	–	108-028510
OKC-2H	AO10, AO15, AOVH5, AOC-19, AOC-22	–	OAI 04	AC5, AC10, AC15	108-028514
OKC-3H	AO20, AOVH10, AOC-24, BOL-8	AC8	OAI07-4, OAI07-2	AOCH5	–
OKC-4S	AO25, AOVH15, AOC-33, BOL-16	–	OAI11-4	AC 20, AOCH10	208-028518, 208-028522
OKC-5S	AO30, AOVH20, AOC-37	AC16	OAI11-2, OAI16-6, OAI16-4	AC25, AOCH15, AOCH20	213-028538
OKC-6H	AOVH25, AOC-50	AC30	OAI23-6, OAI23-4	AC30	113-028526, 113-028530, 213-028534
OKC-6S	AO35	–	–	–	–
OKC-7S	BOL-30, APC-54, BOL-400, AO40	–	–	AC35, AOCH25	–
OK-1H	–	–	–	–	108-028510
OK-2S	AO5, AO10, AOC-19, AOC-22	–	–	AC5, AC10	108-028514
OK-2H	–	AC8	OAI-04, OAI07-4	AC15, AOCH5	–
OK-3S	BOL-8	–	OAI07-2	–	–
OK-3H	AO20	–	OAI11-4	AC20	208-028518, 208-028522
OK-4L	AOVH15, AOC33	–	–	AOCH10	–
OK-4S	AOVH20, AOC-37	–	OAI11-2	AC25	–
OK-5L	AO25, BOL-16	–	–	–	–
OK-5S	–	–	OAI23-6, OAI16-4	–	–
OK-6L	AO30, AOC-50	AC16	OAI-16-4	AOCH15	113-028530
OK-6S	AO35, AOVH25	AC30	–	AC30, AOCH20	113-028526, 213-028534
OK-7L	AO40	–	–	–	213-028534
OK-7S	–	–	–	–	313-028542, 313-028546
OK-8L	AOVH30, AOC-54, BOL-30, BOL-400	–	–	AC35, AOCH25	–
OK-8S	AOC-57, BOL-725	AC40	OAI33-6, OAI33-4, OAI44-6	AC40	318-028926
OK-9L	AOVH35	–	–	–	318-028926
OK-10L	AOC-70, BOL-950	AC10	OAI44-4, QAI56-6	AOCH35	–
OK-11L	AOVH40, BOL-1200, BOL-1600	AC100	OAI56-4, OAI76-8, OAI76-6	AOCH40	–
ELD-1H	AOC-19	–	–	AOMF-1, LP15	–
ELD-1.5H	DF-11	DC-10	OATBD04	EOC-220	–
ELD-2H	AOC-22, AOC-24, DF-12, MA-12	DC-16	OATBD07	AOMF-2, AOMF-4, LP-30, LP-60, EOC-249	–
ELD-3H	AOC-33	DC-20	–	EOC-337	–
ELD-4H	AOC-37, DF-22, MA-32	–	OATBD11, OATBD16	EOC-375, EOC-505	–
ELD-4.5H	AOC-50	–	–	EOC-545	–
ELD-5H	AOC-54	–	OATBD23	–	–
ELD-6H	AOC-57	–	–	–	–
ELD1.5M1.5	RM-08-42, RM-08-12	–	–	BM-101, BM-102	–
ELD2M1.5	RM-19-22, RM-19-21	–	–	BM-201, BM-202	–
ELD3M1.5	RM-24-12	–	–	BM-301, BM-302	–
ELH-2	AOC-70, DF-11, DF12	HC-14	–	–	–
ELH-3	AOC-22, AOC-24	HC-26	OAH007	–	–
ELH-4	AOC-33, DF-22	HC-32	OAH011, OAH016	–	–
ELH-5	AOC-37	–	OAH023	–	–
ELH-6	AOC-50	–	–	–	–
ELH-7	–	HC-48	OAH033, OAH094	–	–
ELH-8	AOC-54	–	OAH056	–	–
ELH-9	AOC-57	HC-120	OAH058, OAH076	–	–
ELH-10	AOC-70	–	OAH028, OAH110	–	–
ELH-11	–	HC-180	OAH112	–	–



Every effort has been made to insure the accuracy of the cooler data and cross reference information. However, due to manufacturer design changes, HYDAC cannot accept responsibility for selection or misapplication of the product. Please contact HYDAC for additional information.

1) Registered trademark of the Autokühler GmbH & Co.

2) Parker-Hannifin is a registered trademark of Parker Intangibles, LLC.

3) Olaer (Olaer Industries SARL) is a registered trademark of Parker-Hannifin France, SAS.

4) Hayden is a registered trademark of the Hayden, Inc. Corporation of California.

Notes



Ordering HYDAC Literature...

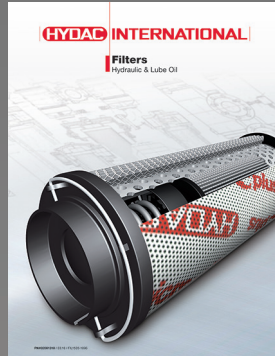
HYDAC literature is available for ordering.

Email us at HYD.catalog@hydac-na.com using the appropriate Part Number (PN) and name. Other brochures, manuals and technical documents are also available when ordering from our website.

Overview Brochure
PN02088157



Filters Catalog
PN02081318



Accumulators Catalog
PN02068195



Compact Hydraulics
Catalog* (online only)



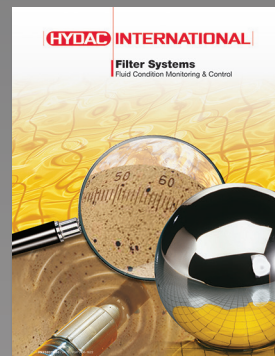
Elec. Sensors & Controls
Brochure PN2205620



Standard Coolers
Catalog - PN02085359



Filter Systems Catalog
PN02075860



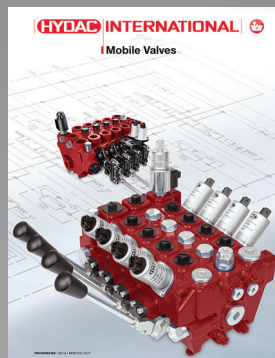
Control Technology*
Catalog (online only)



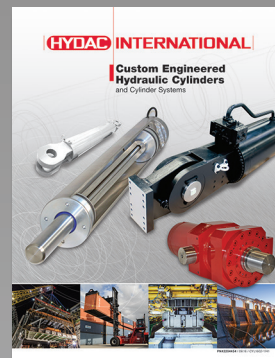
Accessories Catalog
PN02080105



Mobile Valves Brochure
PN02092408



Hydraulic Cylinders
Brochure PN2204454



Process Technology*
Catalog (online only)



*These catalogs are digital file versions only.

Various market and product brochures are also available for ordering.



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