AOC Series - Industrial Air Cooled Copper Tube/Aluminum Fins

Industrial Air Cooled Copper Tube/Aluminum Fins

The Industrial AOC Series is a low cost cooler for basic hydraulic power unit applications. It features an AC fan drive and is available with or without an internal bypass. The dual rated (50/60 Hz) electric motor allows for application flexibility around the globe. Removable air filters prevent air-side core blockage (clogging of fins with debris) and aggressive turbulators allow for optimal heat rejection at lower flow rates.

For additional sizing information consider using TTP's XSelector online sizing Program. *

OPTIONS
NPT, SAE or BSPP oil connections
Serviceable internal pressure
bypass (not available on AOC-08)

How to Order

Model Series

AOC

Model Size Selected

08
(See Performance Curve Chart on page 2)

Number Of Passes

1 - One Pass
2 - Two Pass
4 - Four Pass

Connection Type

1 - NPT
2 - SAE
3 - BSPP

Bypass Setting*

Blank - No Bypass
30 - 30 PSI (2 Bar) Pressure Bypass (Available on One Pass only)
60 - 60 PSI (4.1 Bar) Pressure Bypass

Specify Motor Required

1PH - 115/230 Volt
NM - No Motor

Model Series

AOC

Model Size Selected

19, 22, 24, 33, 37, 50, 54, 57, 70
(See Performance Curve Chart on page 2)

Connection Type

1 - NPT
2 - SAE
3 - BSPP

Bypass Setting*

Blank - No Bypass
30 - 30 PSI (2 Bar) Pressure Bypass
60 - 60 PSI (4.1 Bar) Pressure Bypass
*Available on One Pass only
This is a partial flow pressure bypass only. It is not designed to be a full flow system bypass.

Specify Motor Required

1PH - 115/230 Volt
3PH - 208-230/460 Volt
575 - 575 Volt
NM - No Motor

Features

Low cost	**Core filter standard (except AOC-08)**
Quiet operation	**3/4" Tubes**
AC motors	**Mounting brackets**
Single or three-phase 60/50 HZ motors	**SAE connections**

Ratings

Maximum Operating Pressure 300 PSI

Maximum Operating Temperature 350°F

Oil Flows to 150 GPM (330 LPM)

Heat Rejection up to 85 HP (64 kW)

Materials

Tubes Copper

Fins Aluminum

Turbulators Aluminum

Fan Blade Aluminum with steel hub

Fan Guard Steel with powder coat

Filter Stainless frame with washable media

Cabinet Steel with powder coat finish

Internal Pressure Bypass Options

AOC-08
One pass (30 and 60 PSI)
Two pass (60 PSI), only
Four Pass – Not available
All 08 bypasses are non-serviceable

AOC-19 through AOC-33
Available in 30 PSI or 60 PSI settings
3/4" External, all steel valve
Serviceable

AOC-37 through AOC-70
Available in 30 PSI or 60 PSI settings
1½" External steel valve
Serviceable

* To register for **XSelector** please go to **www.thermaltransfer.com/get-in-touch/** and complete the **XSelector** Inquiry form and submit.

Download the **XSelector** for both Apple and Android formats by searching for **XSelector** in their App Stores. You must first register for **XSelector** before using it on mobile devices.

Selection Procedure

Performance Curves are based on 50SSU oil leaving the cooler 40°F higher than the ambient air temperature used for cooling.This is also referred to as a 40°F approach temperature.

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

STEP 2 **Determine Approach Temperature.** Desired oil leaving cooler °F – Ambient air temp. °F = Actual Approach

STEP 3 **Determine Curve Horsepower Heat Load.** Enter the information from above:
Horsepower heat load x $\dfrac{40 \times Cv}{Actual\ Approach}$ = Curve Horsepower

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

STEP 5 **Determine Oil Pressure Drop from Curves:**
● = 5 PSI ■ = 10 PSI ▲ = 20 PSI ✛ = 40 PSI Multiply pressure drop from curve by correction factor found in oil △P correction curve.

For additional sizing information consider using TTP's XSelector online sizing Program.*

Desired Reservoir Temperature

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

Off-Line Recirculation Cooling Loop: Desired temperature is the oil temperature entering the cooler. In this case, the oil temperature change must be determined so that the actual oil leaving temperature can be found. Calculate the oil temperature change (oil △ T) with this formula:
Oil △ T = (BTU's/HR) / (GPM Oil Flow x 210).
To calculate the oil leaving temperature from the cooler, use this formula:
Oil Leaving Temp. = Oil Entering Temp – Oil △ T.
This formula may also be used in any application where the only temperature available is the entering oil temperature.

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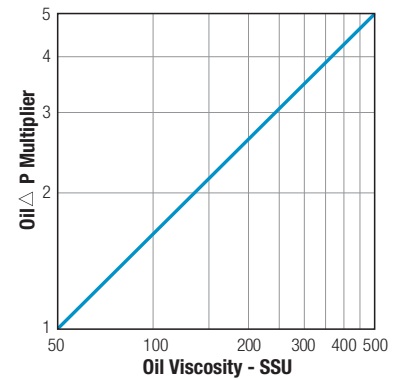
Oil Temperature

Typical operating temperature ranges are:

Hydraulic Motor Oil	110° - 130°F
Hydrostatic Drive Oil	130° - 180°F
Bearing Lube Oil	120° - 160°F
Lube Oil Circuits	110° - 130°F

Performance Curves
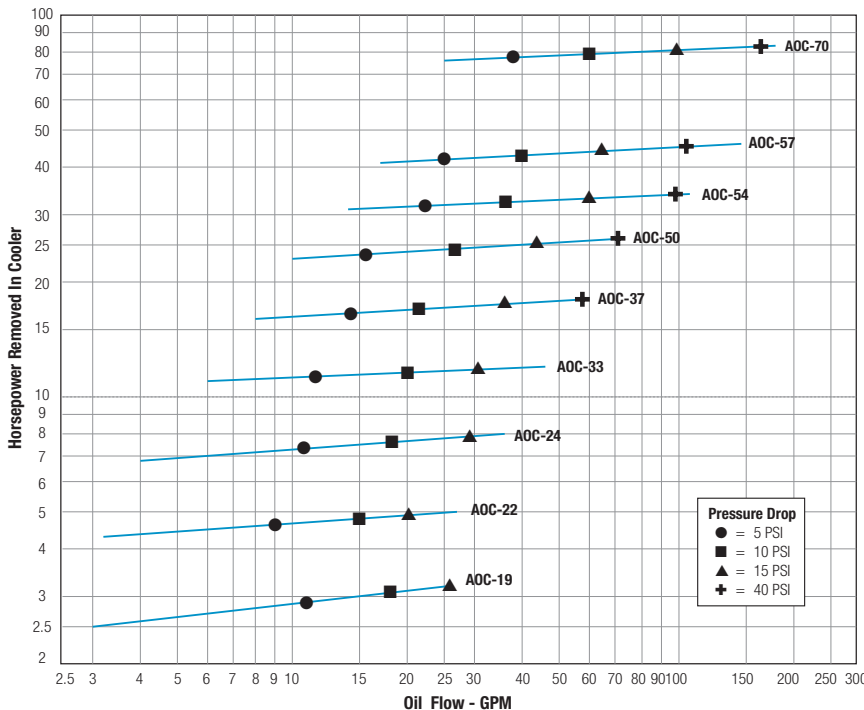
Oil Pressure Correction

De-rate cooler performance by 10% when used in 50 HZ service.

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** For Salt Water applications a Zinc Anode needs to be plumbed in the water inlet of the cooler to prevent corrosion.

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C$_V$ Viscosity Correction

Average Oil Temp °F	OIL				
	SAE 5 110 SSU at 100°F 40 SSU at 210°F	**SAE 10** 150 SSU at 100°F 43 SSU at 210°F	**SAE 20** 275 SSU at 100°F 50 SSU at 210°F	**SAE 30** 500 SSU at 100°F 65 SSU at 210°F	**SAE 40** 750 SSU at 100°F 75 SSU at 210°F
100	1.14	1.22	1.35	1.58	1.77
150	1.01	1.05	1.11	1.21	1.31
200	.99	1.00	1.01	1.08	1.10
250	.95	.98	.99	1.00	1.00

Specifications

Electric Motor Data

AOC-08 Model

Model	Motor Power	115/230 V	50/60 HZ	Type	RPM	Bearings S-Sleeve	Thermal Overlaod	Shipping Weight LBS	dB(A) 3 FT	CFM 260 HZ
AOC-08	1/30	115 V 230 V	1.1 Amps Full Load .7 Amps Full Load	TEAO	3000	S	Yes	12	70	208

AOC-19 - 70 Model

| Model	Motor HP	No. of Motors	Frame Size	Single Phase	Three Phase	575 Volt	RPM	Type	Bearings B-Ball	Thermal Overlaod	dB(A) 3 FT
AOC-19	1/4	1	Custom					TEAO	B	Yes	80
AOC-22	1/4	1	Custom					TEAO	B	Yes	80
AOC-24	1/4	1	Custom					TEAO	B	Yes	80
AOC-33	1/4	1	Custom	115/230V/60/50 HZ 4.2/2.1 Amps Full Load 60 HZ 2.8/1.4 Amps Full Load 50 HZ	208-230/460V/60 HZ 190/380-415V/50 HZ 1.0/0.5 Amps Full Load	575/500V/60/50 HZ .65 Amps Full Load 60 HZ .60 Amps Full Load 50 HZ	1700 (60 HZ) 1350 (50 HZ)	TEAO	B	Yes	80
AOC-37	1/4	2	Custom					TEAO	B	Yes	84
AOC-50	1/4	2	Custom					TEAO	B	Yes	84
AOC-54	1/4	2	Custom					TEAO	B	Yes	84
AOC-57	1/4	2	Custom					TEAO	B	Yes	84
AOC-70	1	2	56C	115/208-230V/60 HZ 12.8/6.4 Amps Full Load	208-230/460V/60 HZ 190/380-415V/50 HZ 3.4/1.7 Amps Full Load 60 HZ 3.6/1.9 Amps Full Load 50 HZ	575/500V/60/50 HZ 1.5 Amps Full Load 60 HZ 1.4 Amps Full Load 50 HZ	1725 (60 HZ) 1425 (50 HZ)	TEFC	B	No	90

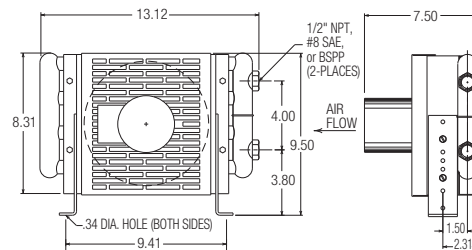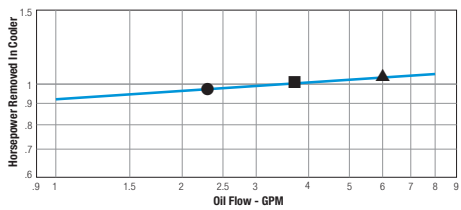NOTE: Amp ratings are per motor. Motors are CSA approved/marked.
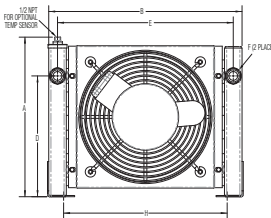
Dimensions

AOC-08 Model

One Pass
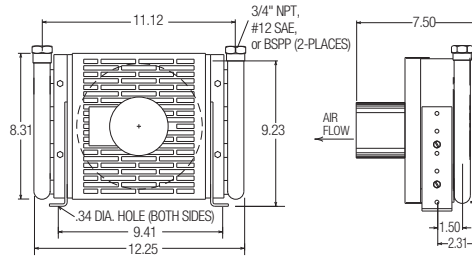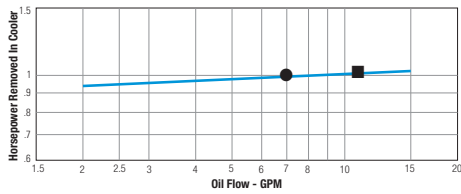
Two Pass

Four Pass
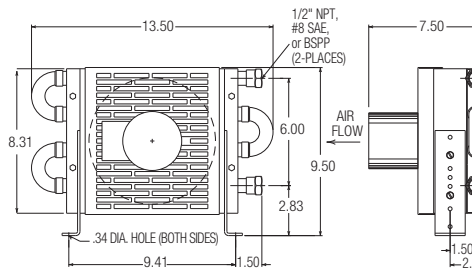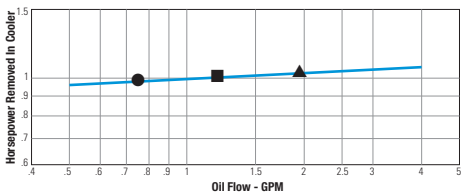
Models AOC-19 through AOC-33

Models AOC-37 through AOC-70
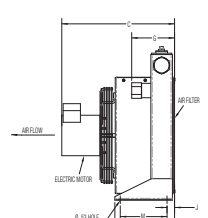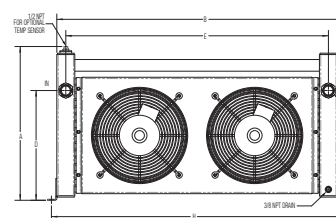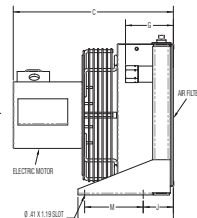
Model	A		B		C	D	E	F		G		H	J	M	P	Weight LBS	60 HZ CFM
	No Bypass	Bypass	No Bypass	Bypass				SAE	NPT & BSPP	SAE	NPT & BSPP						
AOC-19	13.62	16.00	16.50	18.16	13.08	10.31	15.00	#12	.75	3.05	4.12	13.96	2.61	5.00	8.18	19	750
AOC-22	15.62	18.00	22.00	23.66	12.19	12.31	20.50	#12	.75	3.05	4.12	19.46	2.61	5.00	8.18	33	1150
AOC-24	19.62	22.00	24.75	26.41	13.19	16.31	23.25	#12	.75	3.05	4.12	22.21	2.61	5.00	8.18	46	1900
AOC-33	25.62	28.00	30.25	31.91	13.19	22.31	28.78	#16	1.00	3.05	4.34	27.71	2.61	5.00	8.18	65	2150
AOC-37	18.50	21.38	39.00	40.38	15.66	15.25	36.50	#20	1.25	4.62	5.97	40.50	1.06	6.50	8.31	95	2150
AOC-50	22.50	25.38	41.00	42.38	15.62	19.25	38.50	#20	1.25	4.68	6.03	42.50	1.12	6.50	8.37	120	3200
AOC-54	30.50	33.28	42.00	43.38	17.09	27.25	39.50	#24	1.50	4.89	6.30	43.76	1.87	9.00	12.37	154	3800
AOC-57	36.50	39.38	48.00	49.38	16.72	32.75	45.50	#32	2.00	6.68	8.15	49.76	1.87	9.00	12.37	190	4200
AOC-70	38.38	41.25	51.00	52.38	22.62	34.00	48.50	#32	2.00	8.44	9.91	52.75	1.62	9.00	12.12	322	7500

NOTE: All dimensions in inches. We reserve the right to make reasonable design changes without notice. Inlet and outlet oil ports reversible if bypass valve option is not used.