



INDUSTRIAL AQUA COOLER & PUMPING STATIONS



All Non-Corrosive Fluids

Cold Weather Economizer



Ideal for Industrial Cooling

HVAC and Air Conditioning

Closed-Loop Avoids Contamination



Nortek Belair Industrial Aqua Cooler

Why Aqua Cooler?

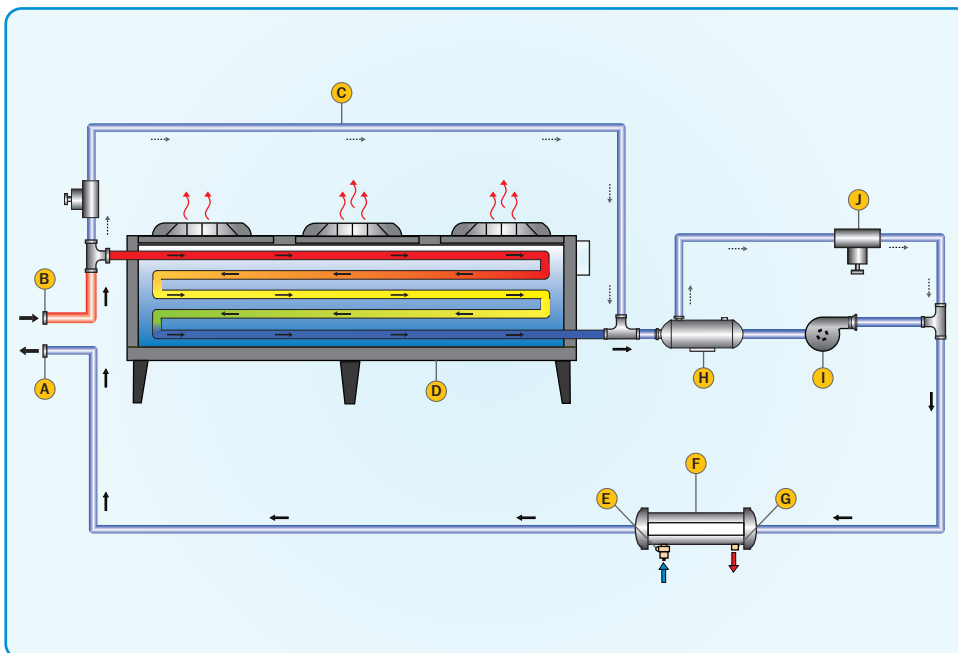
The new Aqua Cooler from Nortek Belair is your most efficient combatant against the rising energy costs. This closed-loop cooling system is self contained and is designed to remove heat from water cooled machinery. It can very efficiently cool the fluid to temperatures slightly above the ambient.

Advantages

- ◆ Quick and easy installation and commissioning
- ◆ Designed and manufactured to suit your application
- ◆ Closed-loop system – eliminates the possibility of corrosion and contamination
- ◆ Requires little or no maintenance
- ◆ Consistent temperatures enhances process efficiency
- ◆ Saves \$\$ - no more city water/sewer recurring costs

Operating Principle

Typical process cooling fluid (water with varying proportions of glycol) is circulated through the closed loop system by using pumps. Ambient air is sucked from the bottom of the Aqua cooler. This results in a steady flow of air around the tubes carrying the cooling fluid. With the use of thermally activated valve (optional) and an additional trim-cooler, temperatures very close to ambient and below can be achieved.



A	Cool Water Out
B	Hot Water In
C	Aqua Cool By-pass (Optional)
D	Air-Cooled Aqua Cooler
E	City Water Inlet
F	Optional Trim Cooler and Controls
G	City Water Outlet
H	Expansion Tank
I	Pump
J	Adjustable High Pressure By-pass Valve

Standard Features:

- ◆ Vertical/Horizontal Air Discharge Configuration
- ◆ Galvanized Steel Frame and Casing
- ◆ Durable Aluminum Casing
- ◆ Aluminum Fins Mechanically Expanded into Copper Tubes
- ◆ 6 pole, 230/460V, Single/three phase, ODP fan motors
- ◆ Fully baffled Fan sections
- ◆ NEMA 3R suitable for outdoor installation
- ◆ Fan Motor Starter
- ◆ Fan Motor Fusing
- ◆ Close coupled centrifugal pump
- ◆ Pre-piped, factory assembled and tested

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Available Options

- ◆ Specially coated fins (Copper, Polyester, Phenolic-coated coils)
- ◆ TEFC Fan motors
- ◆ Easy access coil cleaning panels
- ◆ Fan cycling control system
- ◆ NEMA 4 controls
- ◆ Corrosion resistant – heavy gauge embossed aluminum.
- ◆ Special copper coils
- ◆ Bypass Fluid control valves
- ◆ Temperature controlled fan speed

Specifications

- ◆ All Nortek Belair Aqua Coolers are designed for vertical airflow. (Horizontal airflow is available as an option).
- ◆ All units are UL & CUL and MEA – listed.
- ◆ All units are constructed of heavy-gauge, corrosion resistant galvanized steel for maximum casing rigidity. Multiple fan units are separated by full width baffles to prevent air bypass. This provides additional casing reinforcement.
- ◆ To enhance the tube life, all end panels, center supports and partitions have collared tube holes.
- ◆ The fluid coils are constructed using seamless copper tubing on a staggered pattern. Tubes are mechanically expanded into continuous full –collared plate-type aluminum (or optional copper) fins for permanent metal-to-metal contact.
- ◆ Headers come equipped with vents and drains.
- ◆ All coils are factory pressure and leak tested at 400 PSI.
- ◆ The aluminum fans with painted steel hubs are dynamically balanced and factory tested before shipping to ensure quiet operation.
- ◆ Fan guards are designed from heavy-gauge, close-meshed steel wire with vinyl coating for maximum rigidity, long life and attractive appearance.
- ◆ Fan motors are heavy duty PSC or three phase open drip-proof type with permanently lubricated ball bearings and built-in overload protection. All motors are factory wired with leads terminating in a weather – tight enclosure located opposite the header end of the unit.

Aqua Cooler Specifications

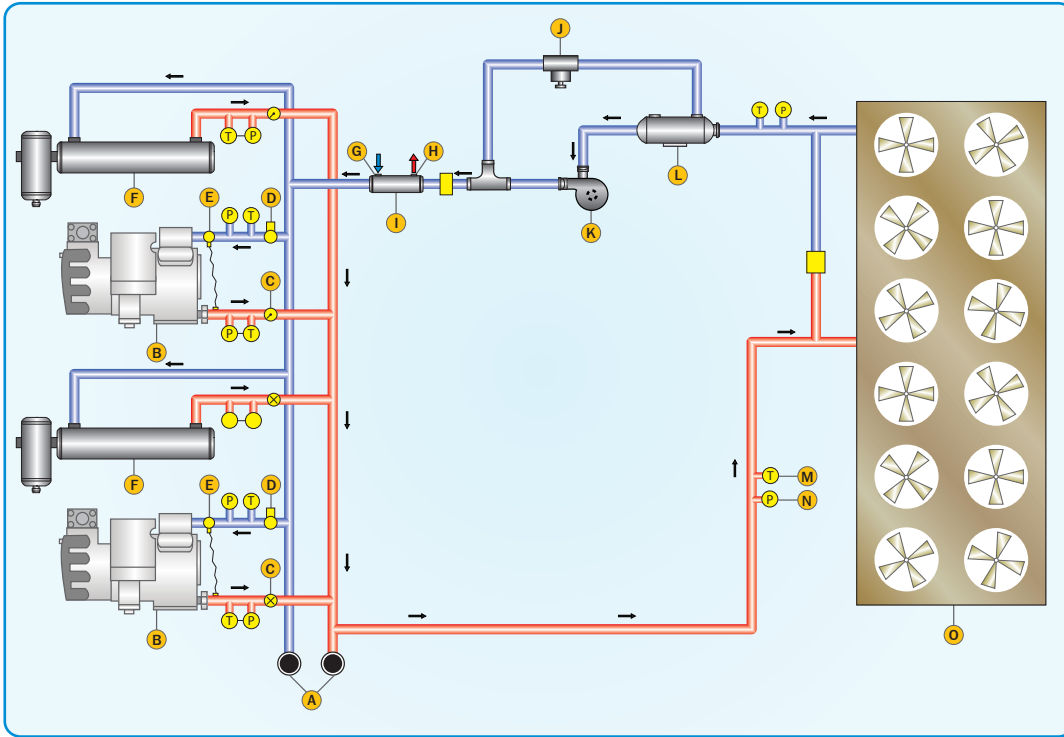
Compressor with After Cooler (HP)	MODEL NO:	PERFORMANCE MINIMUM			PERFORMANCE MINIMUM				FAN DATA VOLTAGE 230/46/3/60	NO: OF FANS	AIR (CFM)	INLET OUTLET (MPT)	INLET OUTLET (MPT)
		MBH	GPM	DT ° F	MBH	GPM	DT ° F	HP					
25-50	100-ACS	182	20	20.4	242	50	10	1.0	10/6	1	14000	1.5"	450
75-150	200-ACS	350	30	29.0	451	60	19.6	1.5	21/15	2	20000	1.5"	600
200	300-ACS	530	40	30.0	856	80	24	1.5	23/15	3	30000	2"	1000
250	400-ACS	620	40	34.0	1162	100	26	1.5	27/15	4	40000	2"	1200
300	400-ACD	637	40	35.0	1336	120	22	1.5	28/16	4	40500	2 ½"	1250
350	500-ACS	795	50	35.0	1415	130	24	1.5	35/18	5	50000	3"	1400
400	600-ACS	890	60	33.0	1422	140	22	1.5	41/21	6	60000	3"	1800
500	600-ACD	924	60	34.0	1680	150	24	1.5	41/28	6	62000	2 (2 ½')	2000
600	800-ACD	1140	70	36.0	2225	170	29	1.5	54/28	8	80000	2(3")	2450
800	1000-ACD	1590	100	35.0	2670	250	24	1.5	67/34	10	100000	2(3")	3000
1000	1200-ACD	2100	140	33.0	3200	350	20	1.5	80/40	12	120000	2(3")	3800

Above performance is based on
 100° F Ambient Temperature
 140° F Entering Fluid Temperature
 40% Ethylene Glycol concentration

Performance range is provided to suggest approximate capacity.
 For final selections, contact Nortek Belair.

Entering fluid temperature _____ °F
 Leaving fluid temperature _____ °F
 Fluid Flow rate _____ GPM
 Fluid Concentration (Water/Glycol) _____ %
 Ambient temperature _____ °F

Nortek Belair Industrial Aqua Cooler



A	Option for Additional Modules
B	Water Cooled Compressor
C	Gate Valve
D	Flow Meter
E	Temperature Control
F	After Cooler
G	City Water Inlet
H	City Water Outlet
I	Optional Trim Cooler
J	Over Pressure Control
K	Pump
L	Expansion Tank
M	Temperature Gauge
N	Pressure Gauge
O	Aqua Cooler

How to size the Aqua Cooler

Glycol Concentration %	0	10	20	30	40	50
Factor F1	1.0	0.95	0.9	0.85	0.78	0.7

$$\text{Capacity} = \frac{\text{Heat Load}}{\text{Glycol correction Factor}}$$

Which Aqua Cooler is suitable for the following conditions ?

Compressor HP = 200
 BTUH/HP = 2420
 Motor Service Factor = 1.10
 Glycol content = 30%

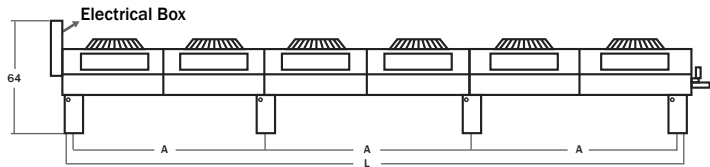
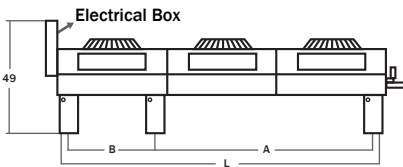
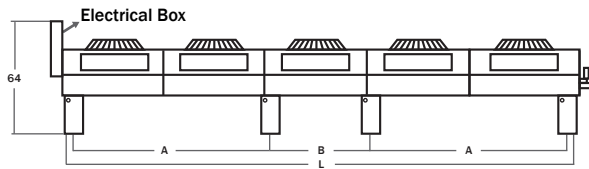
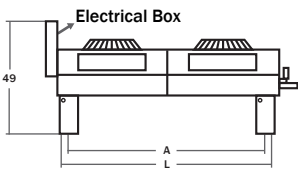
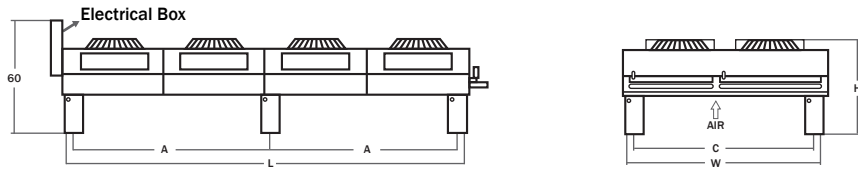
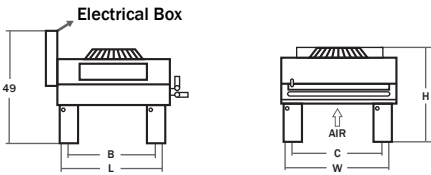
$$\begin{aligned} \text{Heat Load} &= \frac{\text{Compressor HP} \times \text{BTUH/HP} \times \text{Motor Service Factor}}{\text{Glycol Correction Factor}} \\ &= \frac{200 \times 2420 \times 1.10}{0.85} \\ &= 626,252 \text{ BTU} \end{aligned}$$

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Dimensional Data

One Fan Wide								
	L	W	H	A	B	C	Inlet	Outlet
100-ACS	58	45-1/4	49	-	54	41-1/4	1-3/8	1-3/8
200-ACS	112	45-1/4	49	108	-	41-1/4	1-5/8	1-5/8
300-ACS	166	45-1/4	49	108	54	41-1/4	2-1/8	2-1/8
400-ACS	220	45-1/4	49	108	-	41-1/4	2-1/8	2-1/8
500-ACS	274	45-1/4	53	108	54	41-1/4	2-1/8	2-1/8
600-ACS	328	45-1/4	53	108	-	41-1/4	2-5/8	2-5/8

Two Fans Wide								
	L	W	H	A	B	C	Inlet	Outlet
400-ACD	112	90-1/2	49	108	-	86-1/2	(2) 1-5/8	(2) 1-5/8
600-ACD	166	90-1/2	49	108	54	86-1/2	(2) 2-1/8	(2) 2-1/8
800-ACD	220	90-1/2	49	108	-	86-1/2	(2) 2-1/8	(2) 2-1/8
1000-ACD	274	90-1/2	53	108	54	86-1/2	(2) 2-1/8	(2) 2-1/8
1200-ACD	328	90-1/2	53	108	-	86-1/2	(2) 2-5/8	(2) 2-5/8



Pumps



Electrical



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Pumping Station



Model#	Pump HP	GPM@ft. head	Inlet/Outlet	Voltage	Dimensions (single)
75-PSS/PSD		30 @60'	1" NPT	120/208/1/60	36x30x48"
100-PSS/PSD	1	46@60	1" NPT	208//1/60 230/460/3/60	36x30x48"
150-PSS/PSD	1.5	55@60	1" NPT	230/460/3/60	36x30x48"
200-PSS/PSD	2	75@70	1.5" NPT	230/460-3-60	36x30x48"
300-PSS/PSD	3	80@70	2" NPT	230-/460-3-60	40X32X48
500-PSS-PSD	5	120@90	2" NPT	230/460/3/60	40X32X48
750-PSS-PSD	7.5	190@100	2 1/2" NPT	230/460/3/60	48X36X48
1000-PSS-PSD	10	230@100	2 1/2" NPT	230/460/3/60	48X36X48
1500-PSS/PSD	15	280@100	3" FLG	230/460/3/60	60X40X60
2000-PSS/PSD	20	320@100	3" FLG	230/3460/3/60	60X40X60
2500-PSS/PSD	25	420@100	3" FLG	230/460/3/60	60X40X60
3000-PSS/PSD	30	510@100	4" FLG	230/460/3/60	70X48X80
4000-PSS/PSD	40	600@100	4" FLG	230/460/3/60	70X48X80
5000-PSS/PSD	50	800@100	6" FLG	230/460/3/60	80X60X90

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Aqua Coolers and Pumping Stations



High Capacity Dryers



Refrigerated Dryers



Desiccant Dryers