



# INDUSTRIAL WATER SAVER & PUMPING STATIONS



High Efficiency Trim Cooler



3-way Thermostatic Valve



State-of-the-art Controller



Choice of NEMA Enclosures



Centrifugal Pumps



# Nortek Belair Industrial Water Saver

## Why Water Saver ?

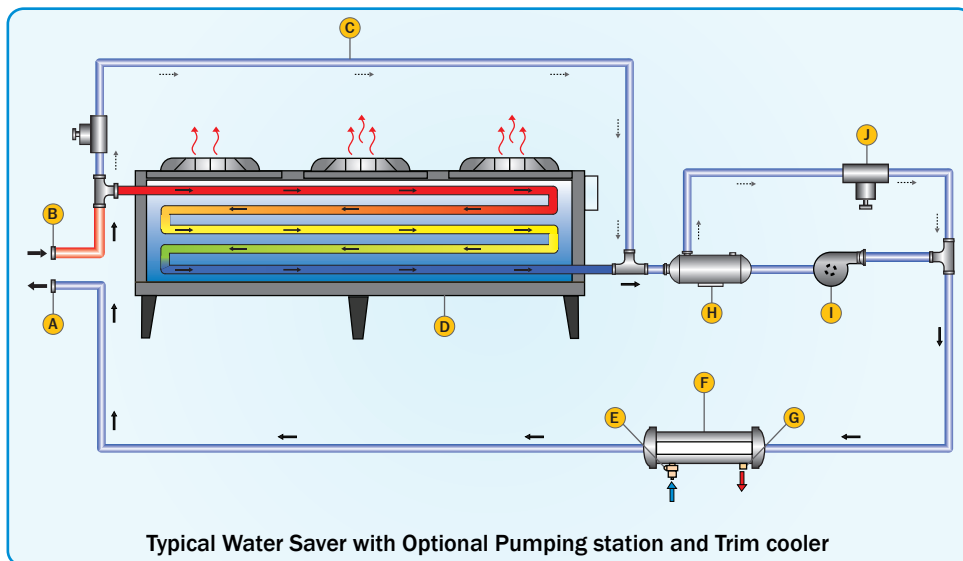
The new Water Saver from Nortek Belair is your most efficient combatant against the rising energy costs. This closed-loop cooling system is self contained and is designed to remove heat from water cooled machinery. It can very efficiently cool the fluid to temperatures slightly above the ambient.

## 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 Water Saver. 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.

## 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



Typical Water Saver with Optional Pumping station and Trim cooler

A	Cool Water Out
B	Hot Water In
C	Aqua Cool By-pass (Optional)
D	Air-Cooled Water Saver
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 (Optional)
- ◆ Pre-piped, Factory Assembled and Tested
- ◆ All Nortek Belair Water Saver 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.

# Nortek Belair Industrial Water Saver

## Optional Features:

- ◆ 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

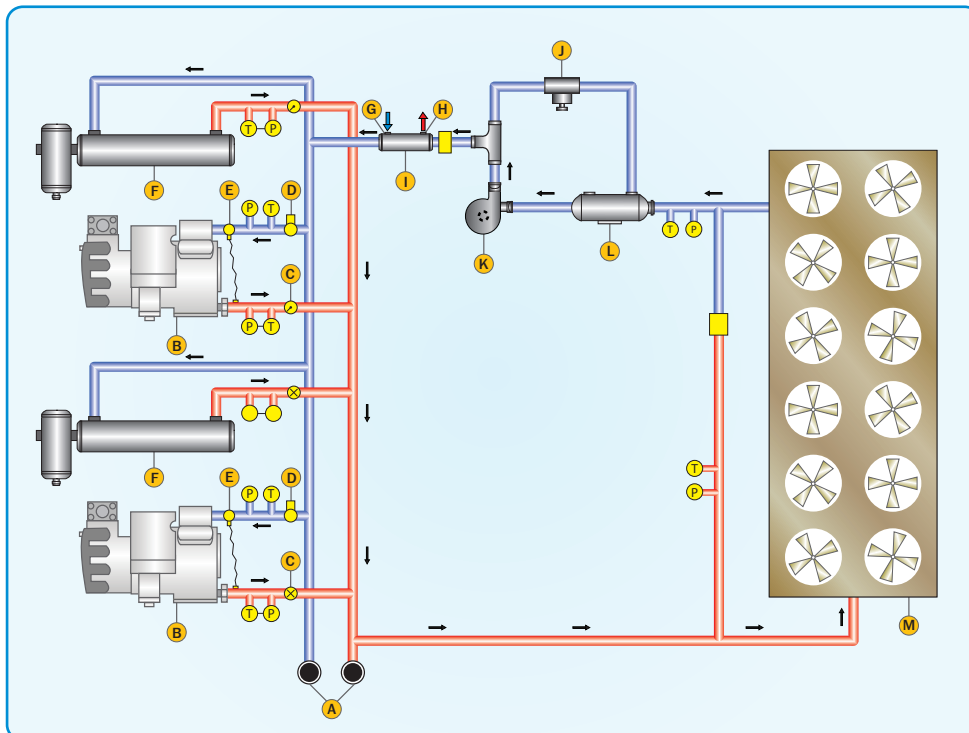
## Water Saver Specifications

MODEL NO:	MINIMUM PERFORMANCE			MAXIMUM PERFORMANCE				FAN DATA			INLET OUTLET (MPT)	WEIGHT (LBS)	COMPRESSOR WITH AFTER COOLER (HP)
	MBH	GPM	DT° F	MBH	GPM	DT° F	HP	VOLTAGE 230/460/3/60	NO: OF FANS	AIR (CFM)			
100-WSS	182	20	20.4	242	50	10	1.0	10/6	1	14000	1 ½	450	25-50
200-WSS	350	30	29.0	451	60	19.6	1.5	21/15	2	20000	1 ½	600	75-150
300-WSS	530	40	30.0	856	80	24	1.5	23/15	3	30000	2	1000	200
400-WSS	620	40	34.0	1162	100	26	1.5	27/15	4	40000	2	1200	250
400-WSD	637	40	35.0	1336	120	22	1.5	28/16	4	40500	1 ½	1250	300
500-WSS	795	50	35.0	1415	130	24	1.5	35/18	5	50000	2	1400	350
600-WSS	890	60	33.0	1422	140	22	1.5	41/21	6	60000	2 ½	1800	400
600-WSD	924	60	34.0	1680	150	24	1.5	41/28	6	62000	2	2000	500
800-WSD	1140	70	36.0	2225	170	29	1.5	54/28	8	80000	2	2450	600
1000-WSD	1590	100	35.0	2670	250	24	1.5	67/34	10	100000	2	3000	800
1200-WSD	2100	140	33.0	3200	350	20	1.5	80/40	12	120000	2 ½	3800	1000

Above performance is based on  
 100° F Ambient Temperature  
 140° F Entering Fluid Temperature  
 40% Ethylene Glycol concentration  
 MBH = \_\_\_\_\_ BTUH / 1000

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

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



<b>A</b>	Option for Additional Modules
<b>B</b>	Water Cooled Compressor
<b>C</b>	Gate Valve
<b>D</b>	Flow Meter
<b>E</b>	Temperature Control
<b>F</b>	After Cooler
<b>G</b>	City Water Inlet
<b>H</b>	City Water Outlet
<b>I</b>	Optional Trim Cooler
<b>J</b>	Over Pressure Control
<b>K</b>	Pump
<b>L</b>	Expansion Tank
<b>M</b>	Water Saver
<b>T</b>	Temperature Gauge
<b>P</b>	Pressure Gauge

# Nortek Belair Industrial Water Saver

## How to size the Water Saver

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

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

### Example:

Which Water Saver is suitable for the following conditions ?

Compressor HP = 200

BTUH/HP = 2420

Motor Service Factor = 1.15

Glycol content = 30%

$$\begin{aligned} \text{Capacity} &= \frac{\text{Compressor HP} \times \text{BTUH/HP} \times \text{Motor Service Factor}}{\text{Glycol Correction Factor}} \\ &= \frac{200 \times 2420 \times 1.15}{0.85} \\ &= 654823 \text{ BTUH} \end{aligned}$$

$$\text{Capacity in MBH} = \frac{654823 \text{ BTUH}}{1000}$$

Capacity in MBH = 654

Referring to the specification table, Model No. 500-WSS is selected.

## Pumping Station



Nortek Belair provides the choice of either a Single (PSS Series) or a Double (PSD series) pumping station. The typical pumping station package includes the pump, the starter, your choice of NEMA enclosure along with monitoring lights and ON/OFF switch. The entire

unit is pre-piped and mounted on a skid. The PSD series comes with 2 pumps and separate control valves. These units come with standard of 230/460 voltage. Optional voltages are also available upon request.

## Autodual controller



The universal pump controller incorporates the latest in electronic technology in a compact and user-friendly enclosure. The controller is independent of the pump size. The fail-size design ensures that the pumping station will operate at the maximum level

of efficiency. With its monitoring capability, it enables equal running time of the pumps. This makes it convenient to schedule maintenance activities.

## Pumping Station Specifications

MODEL#	PUMP HP		GPM@FT. HEAD	INLET/OUTLET	VOLTAGE	DIMENSIONS IN INCHES		WEIGHT (LBS)
	PSS	PSD				SIMPLEX PSS	DUPLEX PSD	
75-PSS/PSD	0.75	(2) 0.75	30@60	1" NPT	110/208-1-60	36x30x48	48x32x48	350
100-PSS/PSD	1	(2) 1	46@60	1" NPT	208-1-60 230/460-3-60	36x30x48	48x32x48	400
150-PSS/PSD	1.5	(2) 1.5	55@60	1" NPT	230/460-3-60	36x30x48	48x32x48	460
200-PSS/PSD	2	(2) 2	75@70	1.5" NPT	230/460-3-60	36x30x48	48x32x48	510
300-PSS/PSD	3	(2) 3	80@70	2" NPT	230/460-3-60	40X32X48	60X36X48	610
500-PSS/PSD	5	(2) 5	120@90	2" NPT	230/460-3-60	40X32X48	60X36X48	670
750-PSS/PSD	7.5	(2) 7.5	190@100	2 1/2" NPT	230/460-3-60	48X36X48	60X48X48	720
1000-PSS/PSD	10	(2) 10	230@100	2 1/2" NPT	230/460-3-60	48X36X48	60X48X48	810
1500-PSS/PSD	15	(2) 15	280@100	3" FLG	230/460-3-60	60X40X60	70X60X60	910
2000-PSS/PSD	20	(2) 20	320@100	3" FLG	230/460-3-60	60X40X60	70X60X60	1100
2500-PSS/PSD	25	(2) 25	420@100	3" FLG	230/460-3-60	60X40X60	70X60X60	1280
3000-PSS/PSD	30	(2) 30	510@100	4" FLG	230/460-3-60	70X48X80	80X70X80	1400
4000-PSS/PSD	40	(2) 40	600@100	4" FLG	230/460-3-60	70X48X80	80X70X80	1650
5000-PSS/PSD	50	(2) 50	800@100	6" FLG	230/460-3-60	80X60X90	90X80X90	2100

\* PSS - Pumping Station Single

\* PSD - Pumping Station Double



# Nortek Belair Industrial Water Saver

## Pumping Station Single (PSS)



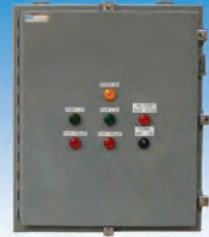
Nortek Belair closed coupled and base mounted centrifugal pumps provide economical performance for a wide range of applications of varying flow rate and head pressure. (Flow rates up to 500 GPM and head pressure up to 140 feet).

## Pumping Station Double (PSD)



The double pump setup is mounted on a heavy skid with a separate regulating valve for each pump. The pump setup come with an isolation valve and maintenance activities can be carried out without shutting down the system.

## NEMA Electrical Enclosure



Nortek Belair Pumping stations are equipped with your choice of NEMA enclosures. Optional control and monitoring indicators can be added along with state of the art controllers.

## Controller



Optional state of the art controllers are used for optimizing the performance of the pumping stations. The PLC's (Programmable Logic Controllers) are designed with ease-of-use in mind. Their modular and versatile features make it suitable for your applications – including local and remote display. Optional PC connections are also available.

## High Efficiency Trim Cooler



The trim coolers are mounted in-line with counter flow and are typically shell and tube or plate type. It monitors the outlet temperature and with its optional auto-regulating feature and ensures consistent inlet temperature to the heat source. Additionally it has bleed and drain valves for maintenance purposes.

## 3 way Thermostatic Valve



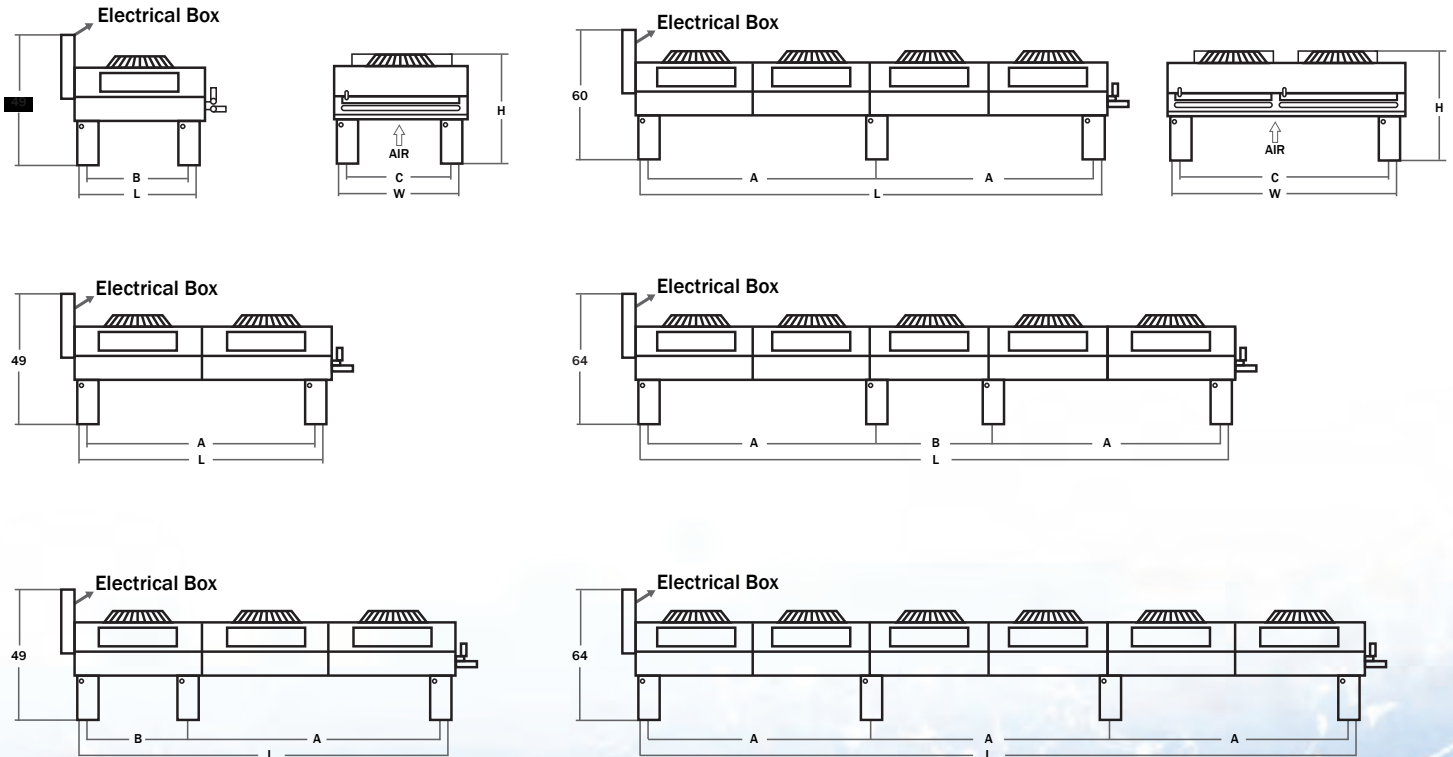
These modulating thermal valves are designed to bypass around coolers during start-up and then provide accurate temperature control for cooling systems during normal operation. They do not require any outside control to operate.

# Nortek Belair Industrial Water Saver

## Water Saver Dimensional Data

SINGLE FAN WIDE								
	L	W	H	A	B	C	INLET	OUTLET
100-WSS	58	45-1/4	49	-	54	41-1/4	1 1/2	1 1/2
200-WSS	112	45-1/4	49	108	-	41-1/4	1 1/2	1 1/2
300-WSS	166	45-1/4	49	108	54	41-1/4	2	2
400-WSS	220	45-1/4	49	108	-	41-1/4	2	2
500-WSS	274	45-1/4	53	108	54	41-1/4	2	2
600-WSS	328	45-1/4	53	108	-	41-1/4	2 1/2	2 1/2

DOUBLE FAN WIDE								
	L	W	H	A	B	C	INLET	OUTLET
400-WSD	112	90-1/2	49	108	-	86-1/2	1 1/2	1 1/2
600-WSD	166	90-1/2	49	108	54	86-1/2	2	2
800-WSD	220	90-1/2	49	108	-	86-1/2	2	2
1000-WSD	274	90-1/2	53	108	54	86-1/2	2	2
1200-WSD	328	90-1/2	53	108	-	86-1/2	2 1/2	2 1/2



## NORTEK BELAIR CORPORATION

Air & Fluid Technologies

### Southeast

1713 Henry G. Lane  
Maryville TN 37801  
Tel: 865-980-6100  
Fax: 865-980-6190

### West

15558 E. Hinsdale Cir., Suite B  
Centennial CO 80012  
Tel: 303-287-6666  
Fax: 720-554-7758

### Northeast

20 Shea Way, Suite 204  
Newark DE 19713  
Tel: 302-894-1191  
Fax: 302-894-1193

[www.nortekbelair.com](http://www.nortekbelair.com) | [www.belairtech.net](http://www.belairtech.net)



Water Saver and Pumping Stations



Heatless Desiccant Dryers



High Capacity Dryers



Heated Desiccant Dryers