KOOLTRONIC
ENCLOSURE COOLING SOLUTIONS

Keep This Manual With Heat Exchanger

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Technical Documents

KNHE30 SERIES WATER-TO-AIR HEAT EXCHANGER

OPERATOR'S MANUAL

CAUTION

BEFORE INSTALLING AND USING THIS HEAT EXCHANGER, IT IS IMPORTANT THAT THIS MANUAL BE READ AND UNDERSTOOD THOROUGHLY

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I. Introduction

Kooltronic Heat Exchangers are designed to provide a cool environment for your electronic or electrical components. There are models to fit virtually all sizes and shapes of electrical or electronic enclosures. Our “closed loop” design also ensures that your components will not be exposed to hot, dirty operating conditions.

This Manual provides you with the necessary general information for properly installing and operating Kooltronic Heat Exchangers. Unit specific technical data and mounting instructions are presented later in the Manual.

II. Incoming Inspection

Kooltronic Heat Exchangers are designed, built, and packaged to withstand the shock and vibration normally associated with shipment by common carriers. Occasionally improper handling during shipping causes damage. Such handling could include unbanding of palletized shipments, failing to respect any carton handling instructions, falling off conveyors, excessive vibration, crushing, etc. Therefore, a thorough inspection should be done upon receipt of all shipments. Any carton tears, dents, scratches, or loose articles should be noted on the Freight Bill. Cartons should be opened promptly and the units inspected for CONCEALED DAMAGE.

An immediate claim MUST be filed with the freight carrier and an inspection requested. Retain all packing materials. Kooltronic cannot assume responsibility for Consignee's failure to file a timely freight claim.

III. Product Handling

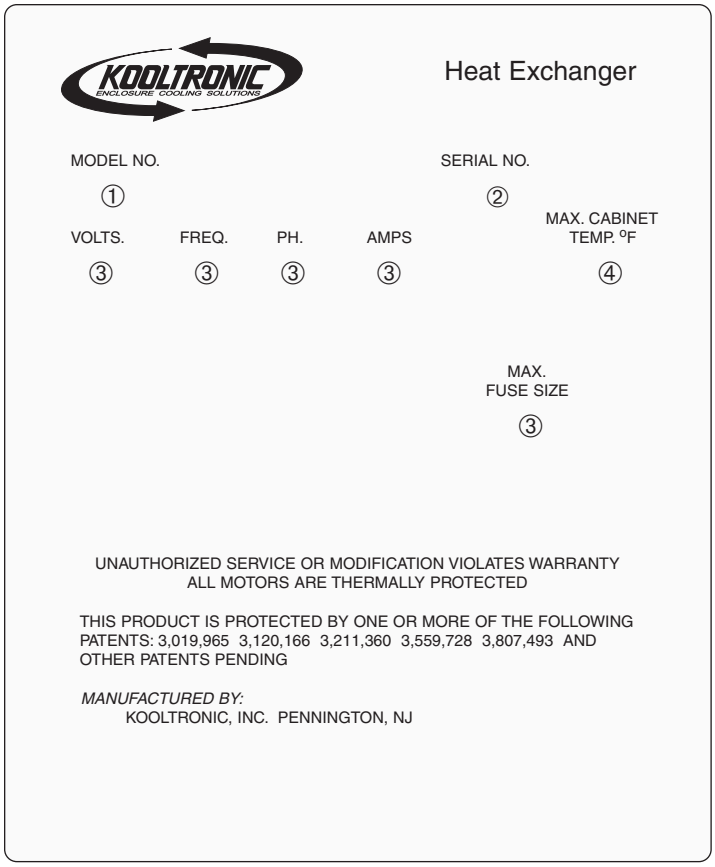
- Do not attempt to operate your Kooltronic Heat Exchanger until you read and thoroughly understand this Manual.
- Before operating this unit, all electrical wiring must be checked to assure the proper connections.

CAUTION

Operate this unit only on the proper voltages and frequencies as noted on the nameplate.

IV. Product Identification and Nameplate

Each Kooltronic Air Conditioner includes an identification nameplate. This nameplate provides:



① Model Number
② Serial Number
③ Electrical power characteristics
④ Maximum ambient operating temperature

We recommend you copy this information from your unit.

① ② When ordering parts, specify the Model Number and Serial Number.

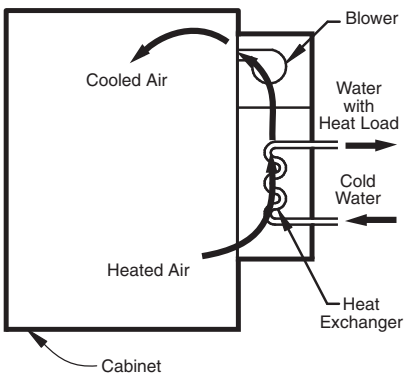
③ Before operating, be sure that the power source matches these requirements.

④ Make sure that these parameters are met. Failure to do so may result in permanent damage to the unit.

V. Principles of Operation

If ambient air cannot be utilized directly as a cooling medium, another cost-effective method of cooling is a Water-to-Air system (below). Water is used to remove heat from the air circulated within the electronics enclosure.

Cooling water is circulated through a tube-and-fin coil. As the heat-laden air circulates through the coil, the heat is absorbed by the water and carried away, in a continuous process.

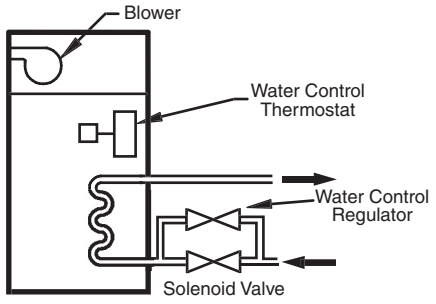


A Water-to-Air Heat Exchanger works by transferring heat of internal air to circulating water, resulting in chilled air which is recirculated throughout the electronics or electrical cabinet.

Figure 1

Water-to-Air systems are easy to install and usually require minimum maintenance. The water used must be reasonably clean and cold enough to ensure proper operation of the cooling system under the most severe anticipated conditions. In some cases, if sufficiently cold water is available, below-ambient-temperature cooling can be achieved.

The Heat Exchanger with options -- Automatic Water Flow Control is shown on Figure 2.



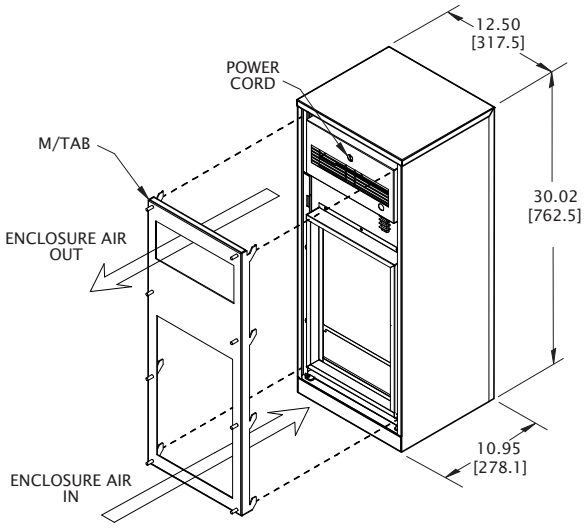
The Adjustable Water Control Thermostat opens and closes a water solenoid valve based on the set point and differential settings. A temperature sensor is located in the airstream of the cabinet. The Adjustable Water Control Thermostat has a factory set point of 75°F.

Figure 2

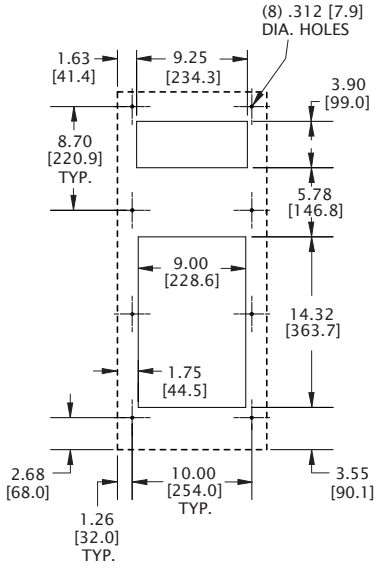
VI. Specific Model Data

Mounting

FIGURE 1



MOUNTING PLAN



Dimensions, (inches) [metric], are for reference only and are subject to change.

Kooltronic Heat Exchangers have been engineered to be installed easily. To avoid damaging your Heat Exchanger, please read the following information before installation:

1. Loosen the two screws on the bottom holding the Mounting Template and Assembly Bracket (M/TAB) to the unit. Remove the M/TAB.
2. See Figure 1 for proper orientation. Place the M/TAB flush against the outside of the cabinet to locate cutouts and mounting holes.
3. **Make sure the cutouts don't interfere with components inside your cabinet.**
4. Mount the M/TAB to the outside of the cabinet using all the mounting hardware (nuts/washers) supplied by Kooltronic. Tighten nuts securely.
5. Route the power cord and alarm wires through the top cut out in your cabinet. Mount the unit to the M/TAB by sliding the slots on the bulkhead into the hooks on the M/TAB. After unit is in place, tighten 2 screws at bottom of unit. These two screws will force the M/TAB into studs on side panel for a tight seal.
6. Attach overflow drain hose supplied to the drain exit at the bottom of the unit. This hose must not be elevated above the exit port. Improper mounting will impede the flow of condensate and may cause internal malfunctions.
7. Attach supply line to 1/2" O.D. copper tubing Inlet on bottom of unit.
8. Attach discharge line to 1/2" O.D. copper tubing Outlet on bottom of unit.

TECHNICAL DATA

		Power		Maximum Inlet Water Temp.	Performance Watts/ºF (Watts/ºC)		BTU/H (Watts) @ 95ºF(35ºC) Enclosure Air Temp. 50ºF(10ºC) Inlet Water Temp.		Approx. Weight
Model	Volts	Amps	Watts	ºF (ºC)	1GPM	2GPM	1GPM	2GPM	lbs. (kg.)
KNHE30	115	1.16	133	85 (29)	58 (104)	74 (133)	8,906 (2,610)	11,362 (3,330)	53 (24)
K2NHE30	230	0.57	128	85 (29)	58 (104)	74 (133)	8,906 (2,610)	11,362 (3,330)	53 (24)

* 60 Hz. operation. For 50 Hz. operation, consult Kooltronic.

Note: The rating Watts/°F is the heat dissipation divided by temperature difference between maximum air temperature in enclosure and water temperature entering the heat exchanger.

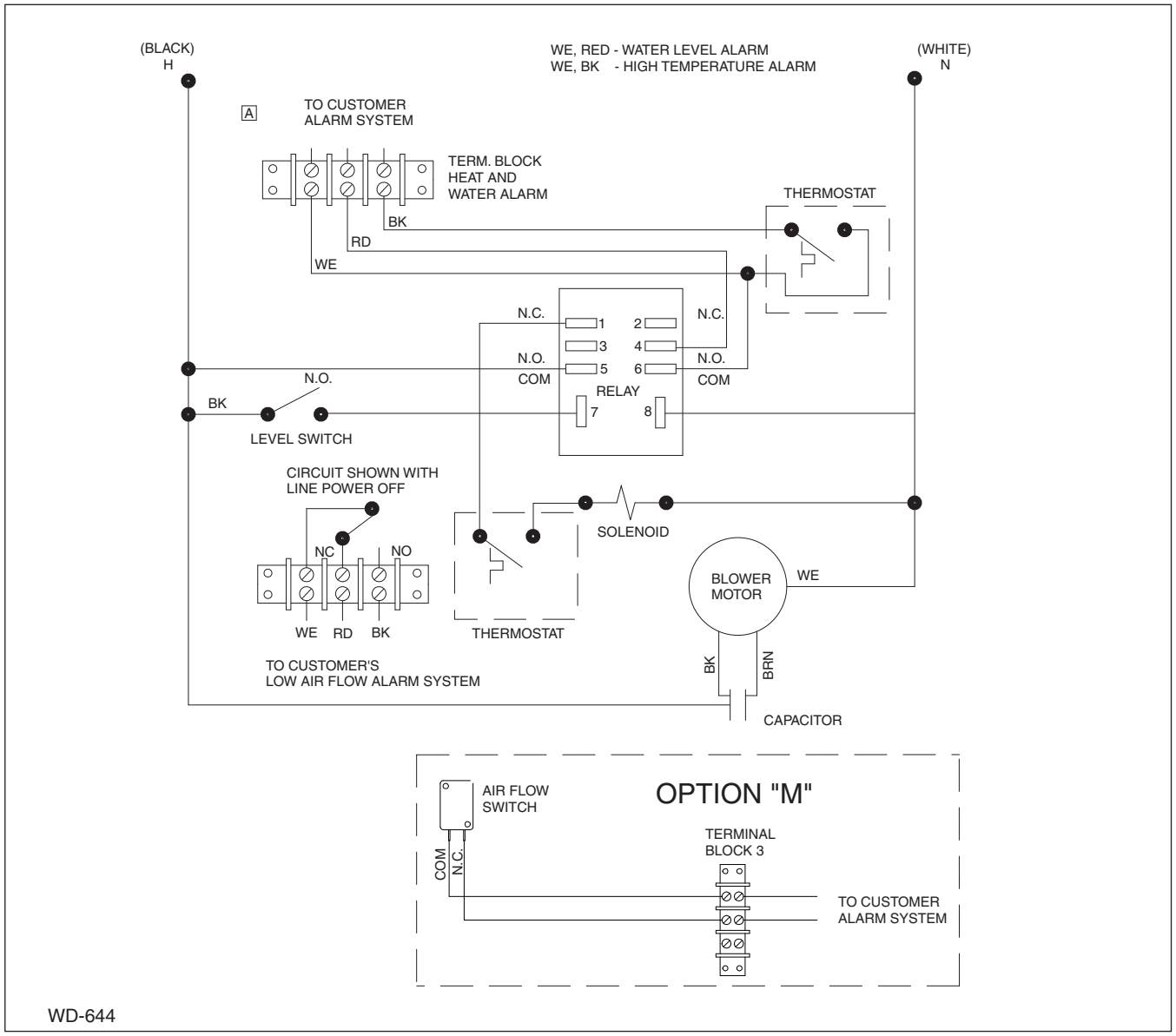
Major Component Replacements

	KNHE30 ***Part Number***	***K2NHE30*** ***Part Number***
Blower	0194-14	0194-15
Capacitor	0452-06	0452-73
Coil	0666-32	0666-32

Options

- Automatic Water Flow Control
- High Water Level Detector
- Internal corrosion resistant coatings
- Low Airflow Detector
- Other voltages and frequencies
- Special materials or finishes
- Special motors, line cords or connectors
- Temperature Alarm

Wiring Diagram



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VII. Maintenance

In general, very little maintenance or repair is required on Water-to-Air Heat Exchangers.

> ***CAUTION***
> **Disconnect electric power from the Heat Exchanger before servicing unit.**

Blowers - Removable for Repair or Replacement

In Kooltronic Water-to-Air Heat Exchangers, powerful blowers are used. Each is carefully chosen to provide optimum airflow characteristics for component cooling as well as heat transfer within the unit. Each of these air moving devices has been engineered and constructed to provide years of trouble-free operation and thus require no periodic maintenance. In the case of air mover failure, blowers are easily removable with simple tools. Replacement Blower Assemblies and Motors are generally readily available from Kooltronic stock. Please see the listing of Major Component Replacements earlier in this manual.

> ***CAUTION***
> **Do not handle or carry the blower by inserting fingers into the blower opening where wheels are located. This could cause a wheel misalignment problem and create an out-of-balance condition. Also, the sharp vanes could result in injury.**

VIII. Packing Procedure

- Keep Heat Exchanger in proper upright position.
- Pack Heat Exchanger in an appropriate carton (preferably original carton if possible), with adequate internal protective packaging, making sure carton is marked properly.
- For local controlled transportation, strap carton where possible, to a secure part of truck to prevent falling or sliding, minimizing vibration, etc.
- For common carrier shipment, band unit(s) securely to a pallet. Unpalletized shipment risks severe damage which voids the warranty.