OWNER'S GUIDE

USE AND CARE MANUAL

UL Classified Industrial / Commercial Evaporative Air Cooler

INSTALLER: Please deliver this guide to owner.

PHOENIX MANUFACTURING, INC.
Committed to Customer Success

* Safety
* Installation
* Start-up
* Operation
* Maintenance
* Trouble Shooting

Congratulations: You have purchased a product of superior performance and design, which will give the best service when properly installed, operated and maintained.

This guide was designed to provide you and your installer with information needed to mount, operate, inspect, maintain, and troubleshoot your Industrial / Commercial evaporative air cooler.

The first section, Installation and Start-Up, is especially for the installer. The second section, Regular Maintenance, contains operational and maintenance instructions for the owner and/or maintenance operations personnel, while Troubleshooting includes information on commonly encountered problems.

READ AND SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

WARNING - TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING.

- Read all instructions carefully before installation.
- Use only the blower motor and circulating pump(s) combinations marked on the Model Nameplate indicating suitability for use in this model. Any other motors or pumps cannot be substituted.
- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.
- When cutting or drilling into a wall or ceiling, do not damage electrical wiring or other concealed utilities (water or gas lines, sewer lines, etc.).
- Cooler motor, pump, cabinet and junction box must be grounded in accordance with all local and national codes. A ground wire must be used between the power supply and the cooler.
- Be sure that the cooler is connected to proper line voltage stamped on the pump and blower (fan) motor specification plate. NOTE: Improper voltage will void the pump and/or motor warranties and may cause serious personal injury or property damage.
- Do not operate this blower (fan) motor with any solid-state speed control device.
- Always disconnect electrical power to unit before working on or servicing cooler. More than one disconnect switch will be required to de-energize the equipment for servicing.
- Do not remove pad frames while cooler is running, this may cause the blower (fan) motor to overload and damage the motor windings.

NOTE:

- Do not locate unit near exhaust or vent pipes as odors or fumes may be drawn into cooler.
- Use of anode devices, chemical additives or treatments in this cooler will void the warranty.
- Your warranty does not cover shipping damage. Report all shipping damage at once to dealer or carrier making the delivery.
- For future reference, record the model, serial numbers and installation date of your evaporative cooler here:

Model # _____

Serial # _____

Install Date: _____

These Industrial / Commercial Evaporative Air Coolers are covered by the following City of Los Angeles (C.O.L.A.) Research Reports. Electrical: RR930159 (3/4, 1 & 1-1/2 Hp single phase applications), Mechanical: RR8075 (all applications)

CONTENTS

Read This Manual Completely Before Installing Your Industrial / Commercial Evaporative Cooler.

Your evaporative cooler is a well crafted unit built using decades of constant engineering research and product development to create an efficient, reliable and economically operating device. Your air cooler was thoroughly tested and inspected before leaving the factory; with regular inspection and maintenance, it will serve as the heart of your building's overall air-cooling and distribution system for many years.

This manual is your guide to proper installation procedures along with information about reasonable care and maintenance that will ensure safe, economical and trouble free cooling. Failure to follow these instructions may damage your cooler, impair its operation, create the potential for serious personal injury and/or void the warranty. ***Read it carefully.***

Don't attempt to perform any part of the installation described in this manual unless you are ***fully qualified*** to do so.

CAUTION: All mechanical, plumbing and electrical installations must comply with local and national building and safety codes, and must be performed by qualified personnel only.

Before attempting to install the cooler, confirm that the following preparations have been made:

- Verify that the supporting surface is strong enough to bear the weight of the cooler when in use; remember that when the system fills with water, the cooler will be much heavier than when dry.

Model Number	Aprox.Operating Weights (lbs.)
D8801 / H8801	475
D1425 / H1425	725
D2231A / H2231	1000

- Make sure you have adequate resources (cranes, safety harnesses, rigging, etc.) for lifting the cooler into place.
- Check the electric power supply to see that it matches the requirements shown on the model and motor nameplates.
- Verify that the supporting surface is level in all directions; this is necessary to ensure proper distribution of water into the pad frame troughs, maximizing cooling performance.
- Confirm that any planned ductwork and electrical supply installation needs comply with local and national code

Location

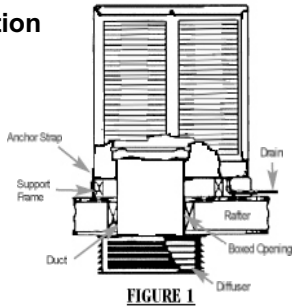


FIGURE 1

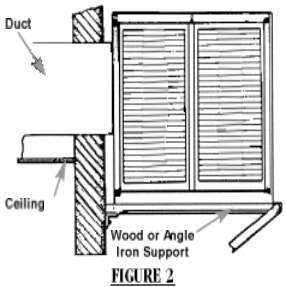
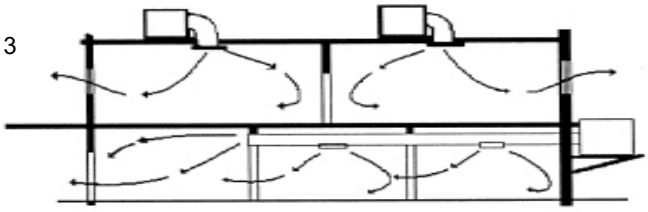


FIGURE 2

Down discharge, commercial and industrial coolers are designed for installation on either flat or pitched roofs (see Figure 1). Side discharge coolers are designed for installation on the side of a building (see Figure 2), or they may be installed on a flat or pitched roof by using a 90-degree transition duct from the cooler opening to the building distribution ductwork (see Figure 3).

Fig. 3



Industrial / Commercial evaporative air-cooling systems (down or side discharge) can be connected to a duct distribution system with outlet registers for each area to be cooled. Down discharge coolers can also be connected to a straight drop duct and use a ceiling diffuser for cooled air distribution throughout the area. When coolers are used to cool large areas, such as factories, auditoriums or supermarkets, divide the area and strategically locate units of proper capacity in each area (see Figs 1 and 3).

Install coolers in a location where only fresh outside air can enter the cooling system. Avoid installing units in closed-in areas, such as an attic or storeroom, which restricts free air movement around and into the cooler, or near vent pipes, kitchen exhaust, etc.; as obnoxious odors or fumes may be drawn into unit.

NOTE: When coolers are installed within the jurisdiction of the City of Los Angeles (C.O.L.A.) building codes, they can only be installed on the outside of buildings. It is also required that any electrical components (motors, pumps, motor starters, etc) used in a C.O.L.A. installation shall be either:

1. Currently listed for its intended use as part of the cooling system equipment by a City of Los Angeles recognized electrical testing laboratory (i.e., UL , ETL, CSA, etc.), or
2. Currently approved for general use by the City of Los Angeles Electrical Testing Laboratory.

Duct System

Air can be delivered over a distance to individual rooms or areas by means of a duct system. The duct system, which is tailored to fit the building, should be designed, fabricated and installed by a competent HVAC sheet metal contractor, preferably while building is under construction.

A typical duct system consists of a main duct, with the same dimensions as the blower opening of cooler, and duct branches, which are sized according to the individual areas to be cooled. Ducts using square cornered elbows are not recommended, as they are highly restrictive to airflow. However, if they must be used, turning vanes inside the corners are required to direct the airflow and reduce airflow resistance as much as possible. To control the volume and direction of air into individual areas, duct mounted registers with adjustable or fixed louvers are attached to the sides or end of duct branches.

Air Exhausting

Evaporative air coolers will function correctly only if there is a way for the cooled air to exit the building. Windows, vents, doors or other exhaust openings at a point most distant from cooled air inlet should be open to permit free movement of air out of the area being cooled, and to avoid building up pressure inside the space. Proper location of exhaust openings is important as they guide flow of air through areas where cooling is desired.

To utilize the maximum capacity of your cooler and to help keep insects, dust, dirt, etc out of the cooled space, the building/space should be maintained at a slightly positive air pressure (airflow into the building slightly more than leaving airflow). Using standard CFM ratings, a general method for determining how much to allow for exhaust openings (vents, doors or windows, etc) for proper air exhausting is 2 square feet of unrestricted opening per 1,000 CFM.

INSTALLATION

CAUTION: Disconnect all electrical power to the cooler before attempting to install, open, or service your cooler. More than one disconnect will be required to de-energize the equipment for servicing. If the cooler is thermostatically controlled, the thermostat may not be used as the power supply disconnect, as it may reset and start the unit unexpectedly.

Even while routinely inspecting or servicing the inside, the cooler can be accidentally started. Keep all personnel away from the cooler and electrical supply when you are working on it. Before servicing or cleaning unit, switch power off at the service disconnects and lock the disconnecting means to prevent power from being switched on accidentally. When the service disconnects cannot be locked, securely fasten a prominent warning device, such as a tag, to the service disconnect or panel.

Electric Power Supply Requirements

CAUTION: All electrical installations must comply with local and national building & safety codes; all work must be performed by qualified personnel only.

NOTE - References in this manual to: National Electric Code (N.E.C.), local or national codes means that those items must comply with applicable installation codes as specified by the building code authority having jurisdiction at the installation location. It is the installer's duty to comply with all requirements.

IMPORTANT:

This UL Classified Evaporative Air Cooler requires the use of two separate electrical power supply circuits to the unit:

1. Blower (fan) motor:
   - Single phase - 115, 208, 230 Volt AC / 60 Hz
   - 3 phase - 200, 208, 230, 460 Volt AC / 60 Hz
2. Circulating pump: (depending on model, more than one pump per unit may be required, see catalog information)
   - Single phase - 115 or 230 Volt AC / 60 Hz. The pump power supply circuit must be a GFCI protected circuit.

Make sure that the circulating pump and (where used) a single voltage blower motor (i.e.; 115V, 230V) are connected to the voltage and frequency (Hz) stamped on each component's specification plate. Make sure that a multiple voltage blower motor (i.e., 115/208-230V) has been properly connected internally to match the available power supply voltage, per the connection diagram on the motor's specification plate.

NOTE: Improper motor voltage connections will void motor warranties.

The motor Hp / full load current, voltage, phase, number of motor speeds and the length of wire from the power supply to the motor are all factors in determining the gauge of wire used in the circuit.

Safety Disconnect Switches

Each unit must have safety disconnect switches (motor circuit and pump circuit) compatible with the installation location and installed in accordance with the National Electric Code (N.E.C.), Article 430 and/or local codes. Each disconnect switch shall be a U.L. Listed disconnect which breaks all ungrounded conductors that can carry current to the unit.

Over-current (short circuit) Protection

Each unit must have over-current protection equipment intended to protect all ungrounded pump and motor branch-circuit conductors, motor control apparatus, pumps and motors against overcurrent due to short circuits or ground faults. They shall have minimum enclosure classifications compatible with the installation location and installed in accordance with N.E.C., Articles 240 and 430. These devices shall be U.L. Listed short circuit protection devices, sized and installed in accordance with specifications as stated in N.E.C., Article 430.

Overload Protection

All pumps and single-phase motors available from Phoenix Manufacturing, Inc. for use in Industrial/Commercial coolers have integral thermal running and locked rotor overload protection as required by the N.E.C.

All 3-phase motors require installation of properly sized and mounted thermal running / locked rotor overload protection.

Branch circuit protection should be properly sized and installed by a competent electrician in accordance with local and national code requirements.

Motor Start Switch / Motor Starter

All motor applications require the use of Start/Stop switches and/or motor starters of the proper current capacity.

In applications where a switch is deemed adequate to start the motor, as defined by N.E.C., Article 430, the branch circuit shall be sized in accordance with N.E.C., Articles 210 and 430. The enclosure for the switch and its installation location shall comply with N.E.C. requirements for the installation of the switch.

A motor starter with integral thermal (running and locked rotor) overload protection is used to start/stop 3-phase motors. Motor starter shall be sized in accordance with specifications stated in the N.E.C., Article 430. Starters mounted to the unit shall have a minimum NEMA 3R (raintight/rainproof) enclosure rating. Starters mounted remote to the unit shall have a minimum enclosure classification compatible with the location and installed in accordance with N.E.C., Article 430.

Pump Power Supply Circuit

The pump supply circuit shall be a GFCI protected circuit with overcurrent (short circuit) protection of 15 AMP and have a minimum of #14 AWG copper wire to the pump receptacles in the junction box assembly. Conduit to the junction box shall be rain-tight or liquid-tight, flexible metal conduit with a separate ground wire, installed per N.E.C., Article 351.

Electrical Ground

For maximum safety, make sure cooler cabinet, blower motor and pump(s) are properly grounded to a suitable ground connection as required by all local and national codes.

Motor Installation

- Mount blower motor to the motor mount using the four carriage bolts and nuts provided in the parts bag. Tighten nuts enough to hold motor in place until belt(s) have been installed, aligned and properly tensioned.
- Connect motor to electrical power supply, as required, making sure motor is wired for proper rotation (some single phase and all 3 phase motors are bi-directional). See arrow on blower housing.
- Adjust motor sheave for expected blower RPM requirement (refer to cooler design/capacity selection tables and RPM information available in the catalog
- Insert motor sheave onto the motor shaft, align by vertically centering motor pulley inline with blower pulley, tighten setscrew to 95 in-lbs.
- Install belt(s) from motor sheave to the blower pulley and adjust belt tension (see “Belt Adjustment”).
- Rotate blower wheel by hand to see that it moves freely without rubbing against housing.
- After motor and belt(s) are installed, complete the motor mounting process by insuring all screws, nuts and bolts are tightened down properly.

Belt Adjustment

CAUTION: Disconnect all electrical power to the cooler and insure that belt is not rotating before adjusting belt tension. Do not adjust belt tension by changing diameter of adjustable sheave. Adjust belt tension only by adjusting motor bracket.

Correct belt tension and alignment is important, proper setup reduces power consumption and prolongs life of belt and motor. When installing or adjusting belt, loosen the motor adjustment bolts and adjust to proper tension for each model as listed. Do not tighten belt by adjusting motor pulley.

Motor Hp	Belt Tension
¾, 1, 1½, 2	25 lbs
3, 5	35 lbs
7½, 10	40 lbs

Adjust Motor Pulley

When the cooler is connected to extended ductwork, the cooler capacity and motor amperage may decrease due to the increased duct resistance. The adjustable motor pulley is to be used ONLY to return the cooler motor to it's maximum allowable amperage and should not be readjusted except for this purpose.

CAUTION: Do not exceed the maximum motor amperage (FLA) stamped on the motor specification plate or motor can be overloaded, damaging motor.

Check amperage with all doors, windows and exhaust vents open and/or all relief systems operating.

Improper pulley adjustment will overload and severely damage motor windings (this damage will NOT be covered under warranty). Only qualified persons with proper electrical equipment and knowledge should adjust variable pitch sheaves.

CAUTION: Never operate unit with pad frames removed. This will result in an overloaded condition and may damage the blower motor.

Pump Junction Box

Mount pump junction box assembly (JBK115 for 115V pumps or JBK230 for 230V pumps) in the location shown on page 7 for your model. Connect pump receptacle wiring inside junction box to the GFCI protected pump power supply wiring as shown in appropriate wiring diagram (label attached to junction box, Figure 5).

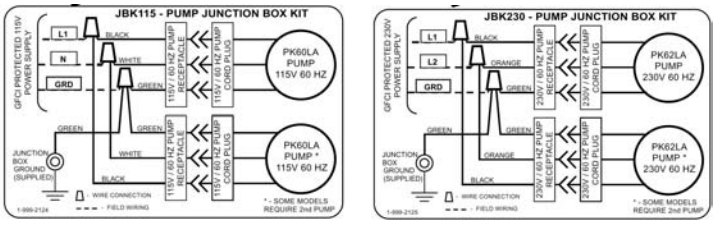


Fig.5

Recirculating Pump

CAUTION: Do not allow pump to fall over and become submerged; water will damage pump motor.

Recirculating pump(s) are necessary for Industrial / Commercial cooler operation. Use pump kit number PK60LA for 115V applications or PK62LA for 230V applications.

Locate and install pump(s) in the location shown on page 7 for your model. Plug pump cord(s) into junction box receptacle(s) and make sure that plug is fully inserted. Place pump cord(s) into wire retainer clips as shown (page 7), insuring that cord(s) does not touch the water in the bottom pan or contact the wet pads.

Install Overflow Standpipe / Drain Line

Install overflow drain bushing in bottom of cooler as follows:

- Slide rubber washer over drain bushing.
- Push drain bushing through bottom of cooler, assemble and tighten lock nut.
- Screw plastic overflow standpipe into the drain bushing and tighten snugly (hand tight) to prevent leakage.
- Connect a suitable drain line (copper / PVC / garden hose) to drain bushing. Never drain water onto a roof; mineral build-up or damage to roof may occur.

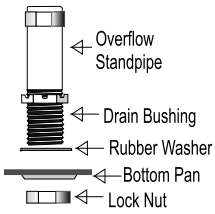


Fig. 6

NOTE: Drain water in accordance with local plumbing codes.

Connect Water Supply

CAUTION: All plumbing installations must comply with local building and safety codes, and must be performed by qualified personnel only.

NOTE: Coolers should not be connected to “soft” water systems. Soft water will accelerate corrosion and decrease the effective life of pads and cooler cabinet. Connect water line as follows:

- A water supply valve should be installed at a convenient location, to allow the water supply to be turned on and off for servicing or winterizing. Minimum 3/8 diameter tubing should be used to provide water to the cooler, larger tubing is recommended if the distance from the valve to the cooler is greater than 100 feet, then reduced to 3/8” at the unit.
- Install float valve in the bracket provided (see Figure 7).
- Connect tubing from water supply to float valve. Place compression nut and ferrule over end of tubing, insert tube into float valve then tighten compression nut to secure.

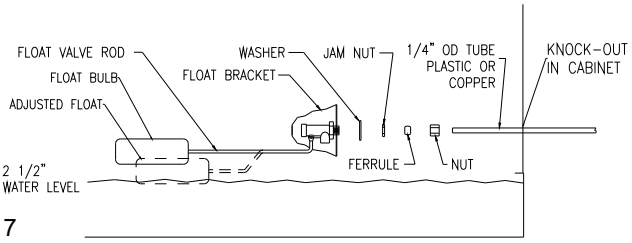


Fig. 7

Install Bleed-off

To minimize mineral scale “build-up”use the included bleed-off assembly. Remove the cap from the bleed-off tee; insert the black tubing and route the tubing through standpipe opening into the drain line (see Figure 8). To prevent siphoning of the water, make sure that the bleed-off tee is above the water level.

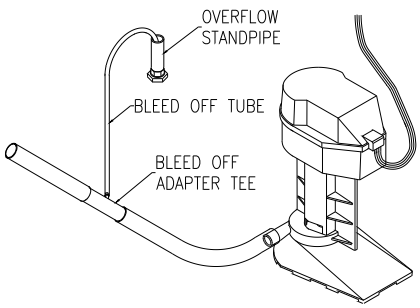


Fig. 8

GENERAL INSPECTION

Initial Start-up or Annual Inspection

CAUTION: Disconnect all electrical power to the cooler before attempting to install, open, or service your cooler. More than one disconnect will be required to de-energize the equipment for servicing. If the cooler is thermostatically controlled, the thermostat is not to be used as the power supply disconnect, as it may reset and start the unit unexpectedly.

Before start-up the cooler for the first time, or at the beginning of each cooling season, make sure that all required connections, adjustments, etc. have been made. Verify that:

- ✓ Cooler mounting is level; ductwork is sealed.
- ✓ Cabinet is securely fastened to mounting.
- ✓ Cooler cabinet is properly grounded. Electrical connections are correctly made, safe and secure.
- ✓ Motor, pump(s), drain, bleed-off, float valve, etc. are correctly installed and fully functional.
- ✓ Water line securely connected, turned on, no leaks noted.
- ✓ Float adjusted for proper water level.
- ✓ Pump impeller turns free and smooth. If in doubt, remove impeller cover (see “Cleaning Pump”) and check rotation.
- ✓ Blower wheel, shaft, pulley and motor sheave bolts / setscrews are tight.
- ✓ Motor sheave / Blower pulley alignment okay; belt correctly tensioned, blower wheel turns freely.

Start-up Check List

CAUTION: Never operate cooler with pad frames removed. This will result in an overloaded condition and may damage the blower motor.

To verify and check out the cooler installation on initial or annual start-up, the following procedure should be followed.

- ✓ Turn electrical supply to pump(s) on.
- ✓ Verify that pump(s) starts and pads are evenly wet.
- ✓ Open building exhaust / relief vents (windows, doors, etc.)
- ✓ Turn electrical supply to blower motor on.
- ✓ Observe that motor starts and runs, check each speed (where applicable) and confirm air delivery.
- ✓ Verify motor amperage does not exceed nameplate.

In case of trouble on any of these steps, refer to the Troubleshooting Chart on page 8.

Cabinet Inspection Checklist

After initial start-up and for a few weeks afterwards, check for and/or observe the following: Refer to the Troubleshooting Chart on page 8 if necessary.

- ✓ Leaks from water lines, pad frames, cabinet, etc.
- ✓ Cooler pads: even wetting, no dry streaks.
- ✓ Confirm water level depth setting is correct.
- ✓ Verify full, even flow in water distribution system.
- ✓ Blower wheel / motor rotates freely, no unusual noises.
- ✓ Belt condition / tension / alignment OK.
- ✓ Check motor mounting, cabinet hardware, setscrews on pulleys, blower wheel are tight

Maintenance Schedule

Regular maintenance and periodic inspection is the key to long and successful service from your Industrial / Commercial Cooler. The cooler should receive major servicing at least once a year, more often if conditions require (dusty environment, constant use, poor water quality, etc.) For maximum cooling efficiency, long life and appearance, every two months during operation, the cooler should be inspected and cleaned.

NOTE: Do Not Undercoat the Water Reservoir

Your cooler's water reservoir is finished with our Peblar XT® appliance-type finish. It is so hard that asphalt-type cooler water pan under-coatings will not stick to it. Undercoating will break free, clogging the pump and water distribution system.

NOTE: Do not use cooler cleaners, cooler treatments, anodes or other chemical additives in this evaporative cooler. Use of any additives or water treatment other than the furnished bleed-off will void your warranty and may impair the life of the cooler.

Before starting any maintenance operation, thoroughly read all operating and maintenance instructions and observe all cautions and warnings.

Cleaning

CAUTION: Never wash your cooler cabinet with a garden hose; water may harm motor and pump or seep into ductwork. Motors damaged by water are NOT covered under warranty.

All foreign materials, mineral scale, hard water deposits, dirt, etc. should be removed from pad frames, water pan and other components. Your cooler's long lasting finish can be brought to like-new condition by using warm water and a soft cloth.

NOTE: Avoid using scouring pads, steel wool or wire brushes, as these will damage the finish and encourage corrosion.

Maintenance & Inspection

IMPORTANT: Before operating cooler at the beginning of each cooling season, turn blower wheel, cooler motor and pump motor shafts by hand to make sure they turn freely. Failure to do so may result in burning out motor.

Periodic inspection of your Industrial Cooler will enhance the chance for long, trouble-free service life. For maximum efficiency, every two months during operation, or any time the cooler is opened, the cooler should be inspected. Some suggested items to look for:

- ✓ Check for leaks from pad frames, cabinet, etc.
- ✓ Any dry spots or streaks on pads when pump is operating?
- ✓ Are bolts, nuts and set screws still snug?
- ✓ Are the bearings, etc., making any unusual noises?
- ✓ Does the blower wheel turn freely?
- ✓ Is float level set correctly?
- ✓ Is water in the bottom pan clean?
- ✓ Belt condition / tension / alignment OK?

Set Screws, Bolts and Nuts

Check torque on setscrews and cabinet hardware:

- ✓ Motor and Blower Pulley set screws (95 in-lbs.)
- ✓ Blower Wheel set screws (1 per side, 150 in-lbs)
- ✓ Cabinet hardware (25 in-lbs)

Adjust Belt Tension

Each time you inspect your cooler, be sure to check belt tension on motor/blower assembly. Check belt condition and replace it if frays or cracks appear. Check alignment of blower pulley with motor pulley (see page 4 for detailed steps).

Cleaning Water Pump & Hose

CAUTION: Disconnect all electrical power to the cooler before attempting to install, open, or service your cooler. More than one disconnect will be required to de-energize the equipment for servicing. If the cooler is thermostatically controlled, the thermostat is not to be used as the power supply disconnect, as it may reset and start the unit unexpectedly.

CAUTION: Do not allow pump to fall over and become submerged; water will damage pump motor.

Clean water pump and hose assembly as follows:

- Unplug pump cord, remove mounting bracket screw and remove pump from cooler. Shake gently to remove water.
- To prevent breakage, carefully release the five snap-out tabs in order noted on base plate and remove impeller base plate from the pump body.
- Using a mild detergent solution and a soft cloth, clean deposits from screen, around impeller and base plate.
- Spin impeller to dislodge any remaining foreign material.
- Remove any foreign material in the hose adapter (between the pump and hose), or between the hose and the water distributor assembly.
- Rinse and reinstall impeller base plate.
- Reinstall pump and reconnect pump cord.

Draining

Drain the cooler (with power off and pads removed) as follows:

- Connect a drain hose to the drain fitting on the bottom of the reservoir, if not already connected to drain line.
- Remove overflow standpipe from the drain fitting.
- Drain and clean reservoir (never drain water onto a roof, mineral build-up or damage to roof may occur).

Touch-Up

The hardness, adhesion and smoothness of the internal and external finish on your cooler makes it extremely unlikely that scratches or chipping will occur. In the event that finish damage does occur, it should be promptly repaired by the following procedures:

1. Sand the area around bare metal spots.
2. Prime and paint with a quality paint.

Do not use asphalt type cooler undercoat material in water reservoir. Undercoat will break free, clogging the pump and water distributor.

Lubrication

Motor Bearings

Some of the 3/4 & 1 Hp, single phase motors used in Industrial / Commercial coolers have ports for lubricating the motor and are oiled at the factory. If the need for oiling is indicated, see individual motor nameplate for specific instructions on re-lubricating the motor. Under normal use, these motors require oiling about every 12 months of operation. ***Do Not Over-Oil***.

The larger Hp motors use ball bearings and are permanently lubricated and do not require lubrication.

Blower Shaft Bearings

D/H8801 or D/H1425 - Blower shaft bearings need periodic lubrication. They should be checked 20-30 days after initial start-up of operation. The oil cups on the bearings should be filled with a good grade of SAE 20W or 30W non-detergent oil when necessary. Under normal use, oiling is required every three months of operation. ***Do Not Over- Oil.***

D2231A or H2231 Blower shaft bearings are sealed and do not require oiling.

Pump Motor Bearings

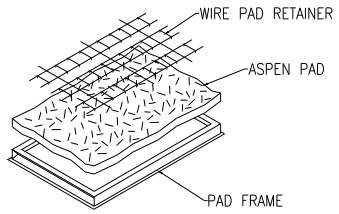
The pump motor does not require lubrication.

Changing Cooler Pads

CAUTION: Disconnect all electrical power to the cooler before attempting to install, open, or service your cooler. More than one disconnect will be required to de-energize the equipment for servicing. If the cooler is thermostatically controlled, the thermostat is not to be used as the power supply disconnect, as it may reset and start the unit unexpectedly.

Your cooler pads should be changed at least twice a year… at the beginning of a season and midway through. However, your pads may need to be changed more frequently, depending on local air and water conditions. For instance, in areas where mineral content of the water is high, deposits may build up in the cooler pads, restricting airflow. Replace pads as follows:

- Remove pad assembly from cabinet.
- Remove pad retainers from frame, using caution as retainers can spring back. Carefully remove all aspen from retainers. Remove and discard old pads.
- Using a mild detergent, wash dirt and scale from pad frames. Wire brushing is not recommended. If finish is damaged or rusting is noted, repair area as noted in the “Touch-Up” section. Rinse with fresh water.
- Lay new pad in frame, starting at trough end, making sure pad is snug against trough and outer edges with no air spaces. ***Note*:** New pad must completely fill frame (no gaps) or hot air may enter building.



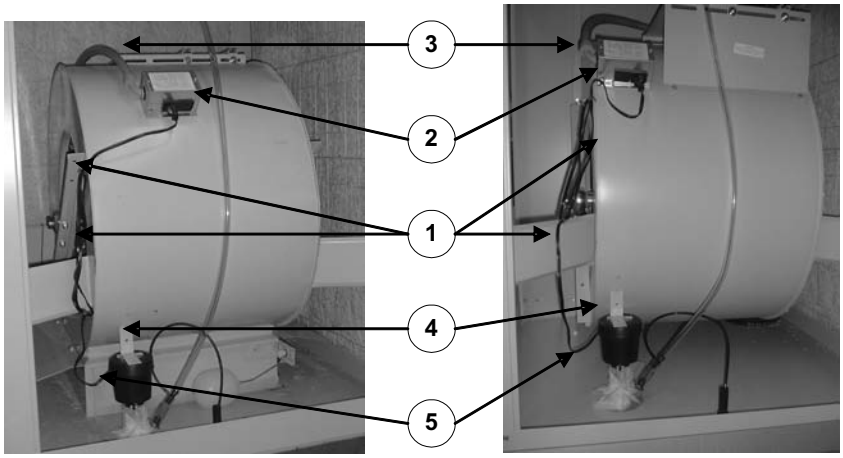
- Pad thickness should be uniform across the frame.
- Replace pad retainers and lock under edge of frame. Sharp points must be buried into pad (they hold pad in place and prevent sagging).
- Pre-soak pads and check for air gaps along edges, reinstall pad frames into unit.
- Start pump and allow troughs to fill… check water level in troughs by slightly tilting each pad frame out.

REPLACEMENT PARTS

When ordering replacement parts, always refer to the serial and model number of your cooler. Use the part numbers listed in the accompanying parts list, as illustrated in the diagrams for your model.

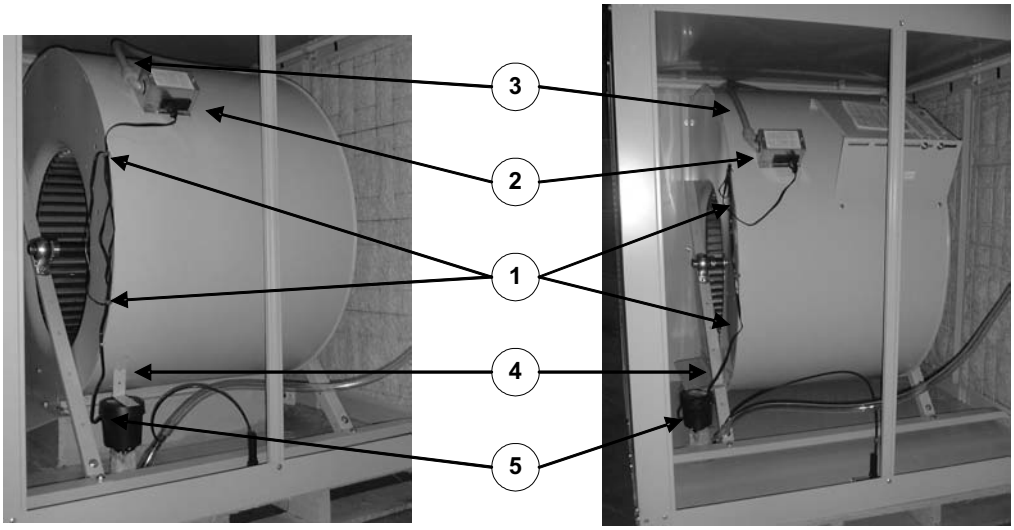
Legend

1. **Pump Cord Clips (approximate locations).**
2. **Pump junction box assembly (JBK115 or JBK230). Using "Locate J-box here" label as a guide, position and install in indicated location using holes in junction box flanges as guides to locate self-drilling screws.**
3. **Conduit and wiring from junction box to GFCI protected pump electrical supply (circuit must match pump voltage).**
4. **Pump location and mounting procedure:**
   - **Position pump as shown for your specific model, make sure pump sits flat on bottom. Bend bracket as required to conform to the mounting surface.**
   - **Using slotted holes in bracket as a guide, mark and drill two 1/8" holes.**
   - **Secure pump with two #10 screws (provided).**
5. **Route pump cord as shown, making sure cord does touch water or wet pads and cannot be pulled into the moving blower wheel or drive assembly. Leave sufficient slack in cord to create a "drip" loop just before the cord enters pump housing.**

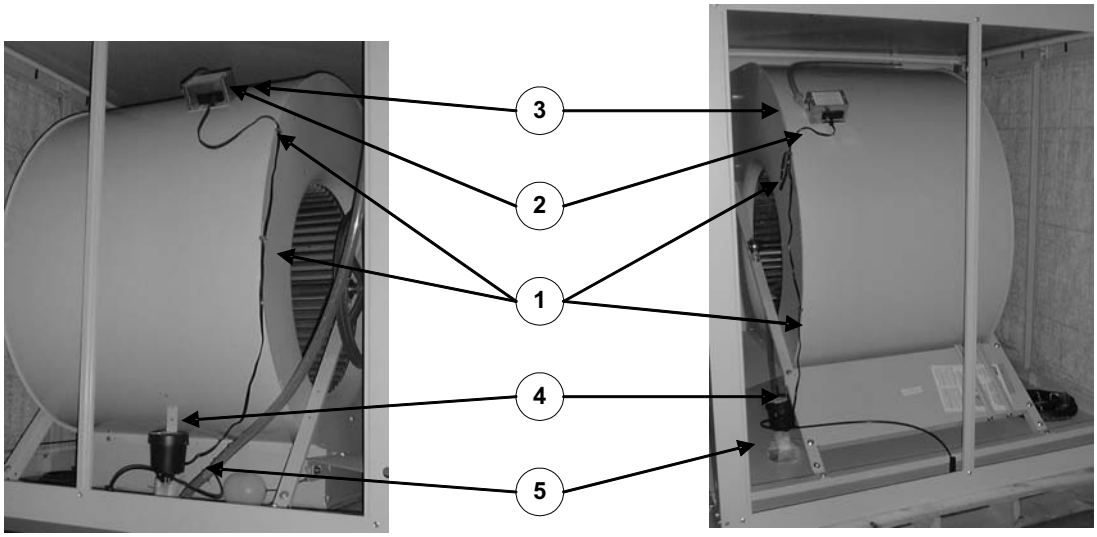


D8801 **H8801**

<u>CAUTION:</u>
Route pump cord through wire clips making sure cord does not touch water in either the bottom pan or the pads in the frame.



D1425 **H1425**



D2231A **H2231**

Troubleshooting:

The following guide is intended to help you diagnose and fix some of the most commonly encountered problems; by no means does this guide cover all of the possible problems you may encounter. If you cannot diagnose and correct the problem, or if it persists, contact qualified service personnel. All electrical work should be done by, or with the help of, a qualified electrician.

PROBLEM / SYMPTOM:	POSSIBLE CAUSE:	CORRECTIVE ACTION:
Units fails to start or deliver air	1. No electrical power to unit	1. Check power supply
	A. Fuse blown	A. Replace fuse*
	B. Circuit breaker tripped	B. Reset breaker*
	2. Belt loose or broken	2. Adjust or replace belt
	3. Motor overloaded and/or frozen bearings	3. Replace motor
	A. Belt too tight or broken	A. Adjust belt tension or replace
	B. Blower wheel bearings dry / frozen	B. Lubricate or replace bearings
	C. Motor overloaded	C. Adjust motor sheave to obtain motor nameplate full load amps*
	D. Inadequate wiring, non-functional breaker or motor starter	D. Call electrician
Unit starts, air delivery inadequate	1. Lack of adequate air exhaust	1. Open relief vents to increase exhaust
	2. Motor under loaded	2. Adjust motor sheave to obtain motor nameplate full load amps
	3. Belt too loose	3. Adjust belt tension or replace
Inadequate cooling	1. Inadequate exhaust from building	1. Open relief vents to increase exhaust
	2. Air registers / diffusers improperly set	2. Adjust to direct airflow as required
	3. Inadequate water supply / pad not wet	3. Check water distribution system
	A. Pads clogged	A. Replace pads
	B. Dry or open spots on pad	B. Repack pads
	C. Trough holes / slots plugged	C. Clean troughs, unplug holes
	D. Pump not working	D. Clean or replace pump
	E. Loose connections in water system	E. Check for leaks and correct
	F. Distributor clogged or corroded	F. Clean or replace distributor
	G. Inadequate bleed-off (pads clogging)	G. Clean or replace bleed-off
	H. Pump basket clogged	H. Clean basket
Motor cycles or fails to operate	1. Excessive belt tension	1. Adjust belt tension
	2. Blower shaft tight or frozen	2. Lubricate bearings, replace if needed
	3. Motor overloaded	3. Correct motor sheave adjustment DO NOT exceed motor nameplate amps*
	4. Pulleys mis-aligned	4. Check and correct alignment
Water draining from unit	1. Float arm improperly set	1. Adjust float
	2. Seat in float valve leaking	2. Replace float valve
	3. Standpipe not tight	3. Tighten standpipe (hand tight)
Knocking or banging sound	1. Bearings dry	1. Lubricate or replace bearings
	2. Wheel rubbing blower housing	2. Re-center wheel in housing
	3. Rotating off-balance	3. Inspect wheel, replace if necessary
	4. Loose parts	4. Inspect blower components, tighten
Blower shakes or rattles	1. Belt or pulley loose	1. Inspect and adjust, replace as required
Excessive humidity inside	1. Inadequate exhaust from building	1. Open relief vents to increase exhaust
Musty or unpleasant odor	1. Stale or stagnant water in cooler	1. Drain, clean and flush reservoir
	2. Pads clogged or mildewed	2. Check bleed-off, replace pads
	3. Pads not completely wet before starting blower wheel	3. Turn pump ON for several minutes prior to starting cooler

* - If condition persists, call electrican