



PORTABLE EVAPORATIVE COOLING SYSTEM

USER'S MANUAL



Manufactured
by

RollSeal[®]

Automated Systems

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1. Warnings

WARNING

- Whenever water and electricity are combined in the same enclosed environment the possibility of electric shock exists. This unit must only be plugged into a three conductor, grounded GFI (Ground Fault Interrupt), power source. Do not open the unit with power applied to the unit. Do not place the unit on a slope or where it can accidentally fall or roll into water.
- Wiring And Connections Must Comply With All National And Local Electrical Codes.
- Installation By Qualified Electrician Required!

WARNING

- Hazardous rotating fan blade. Do not place fingers, arms, or other appendages into the path of the blade, or operate the machine without the guards in place.
- Use Caution When Handling Sharp Metal.

WARNING

Once per month, inspect the internals of the PolarCool for signs of electrical insulation breakdown. Check the seal at the motor, as any holes may allow water to come in contact with open electrical circuits.

2. Limited Warranty

All products are warranted to be free from defects in material and workmanship for a period of one year from the date of purchase if installed and used in strict accordance with the installation instructions. Liability is limited to the sale price of any products proved to be defective or, at manufacturer's option, to the replacement of such products upon their return. No products are to be returned to the manufacturer, until there is an inspection and/or a return-goods authorization (RGA) number is issued.

All complaints should be directed first to the authorized distributor who sold the product. If satisfaction is not obtained or the name of the distributor is not known, write the manufacturer that appears below, directed to the attention of Customer Service Manager.

This limited warranty is expressly in lieu of any and all representations and warranties expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose. The remedy set forth in this limited warranty shall be the exclusive remedy available to any person. No person has authority to bind the manufacturer to any representation or warranty other than this limited warranty. The manufacturer shall not be liable for any consequential damages resulting from the use of our products or caused by any defect, failure or malfunction of our products (Some areas do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.)

This warranty gives you specific legal rights and you may also have other rights that vary from area to area.

Warrantor:

RollSeal, Inc.
PO Box 140
Bremen, Alabama 35033
Phone 256-287-7000
Fax: 256-287-7010



3. PolarCool Performance

The following table shows estimates of the performance of the PolarCool Zone Evaporative Cooling System. These values will vary depending on the particular installation and operating conditions.

PolarCool Model	Drive	Water Consumption Rates (See Note 1)	Power Consumption (Voltage)	Typical Air Movement Rates (cubic feet per minute - See Note 2)	Cooling Area	Reservoir (in Gallons)
36" VS	Direct	12 gallons per hr.	8 amps @ 115v /60hz	11,000	3000 ft ²	38

Note 1: This estimate is under 90+ degree conditions; cooler temperatures will result in less water usage.

Note 2: The cooling area is very dependent on the relative humidity, temperature, and the space being cooled.

3.1 Temperature Differential Readings

The temperature drop from inlet to exit is very dependent on relative humidity and temperature. The higher the ambient temperature and the drier the air, the greater the drop. A temperature drop of 10 to 20 degrees is common.

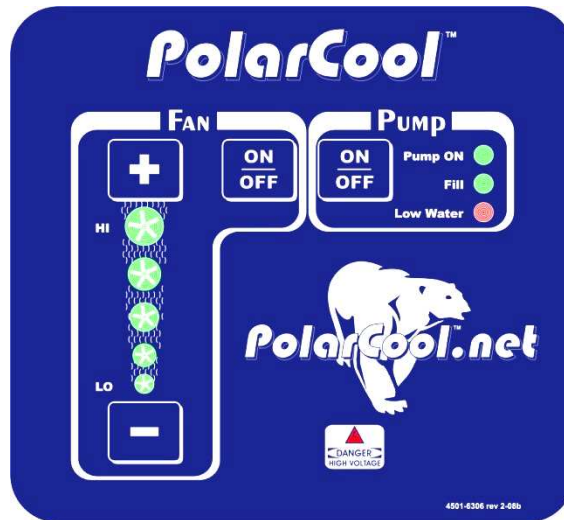
4. Controls

The PolarCool Zone features a user friendly control panel interface with status indicator lights.

4.1 Control Panel

- **Power Indicator Light** – The red Power Indicator Light is located at the bottom-center of the control panel label and illuminates the Danger High Voltage Triangle. The Power Indicator Light remains ON constantly while power is applied to the PolarCool unit.
- **Fan Control ON/OFF Button** – This button is used to start and stop the fan.
- **+ and – Speed Control Buttons** – Used to select the fan speed to any position between LO and HI. These buttons control the fan speed only and do not turn the fan on or off.
- **Water Pump Control ON/OFF Button** – This button is used to start and stop the water pump.
- **Pump ON** – The green indicator PUMP ON light is ON solid when the water pump is running.
- **Low Water** – The red indicator LOW WATER light is ON blinking when the water level is low for less than 1 minute. After the first minute, the red indicator light is ON solid.
- **Fill** – The green indicator FILL light turns ON blinking when the water level has remained low for a constant time of more than 1 minute. Also after the first minute of constant low water level, the water pump will automatically turn off, the Pump ON and Fill green indicator lights will be blinking, and the Low Water red indicator light will be ON solid.

NOTE: The water must be filled above the low level switch and remain above the switch for a minimum of 1 minute solid before the water pump will turn back On.



4.2 Valves

Spray Bar Adjustment Valve– Used to adjust the water flow to the spray bar. The valve can be opened or closed to increase or decrease the water flow to the pads. Too much water can allow droplets or a mist to be blown out of the fan. Too little water will prevent thorough wetting of the pads and will result in a reduction in cooling efficiency. Refer to section 7.9 for flow adjustment details and instructions.

Auxiliary Water Supply/Cut Off Valve – The Zone is equipped with an additional water supply outlet. The outlet is located on the opposite side of the unit from the inlet tap, and is regulated by a cut off valve located near the outlet (See Figure B, page 6). There are two primary uses for the auxiliary water supply outlet:

1. Attaching a water hose to the outlet and opening the cut off valve allows the water supply to be available even as the Zone operates. The water hose can then be used for spraying off the pads, general maintenance, etc. (See Figure A, page 6)
2. The extra water hose can also be used to link one PolarCool Zone to another, eliminating the need for multiple water sources when more than one PolarCool is being used.

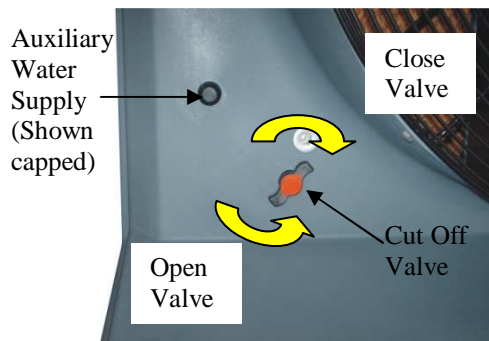


FIGURE A

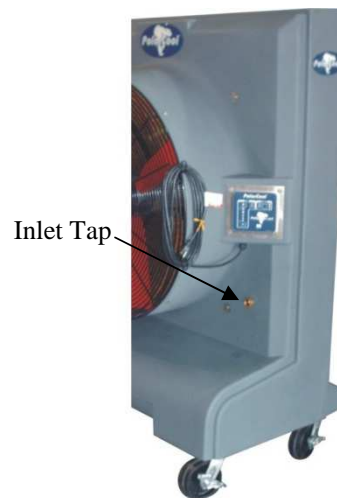
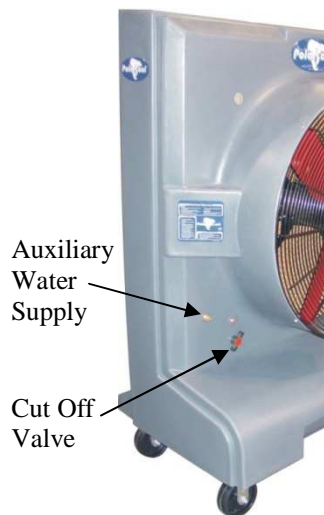


FIGURE B

5. Installation and Preparation

5.1 Unpacking PolarCool

1. Carefully unpack PolarCool Zone from shipping carton. The unit comes completely assembled and ready to use.

5.2 Start-Up

The PolarCool Zone is easy to prepare for operation. There are five easy steps.

1. Hook-up water hose to inlet tap.
2. Check safety of electrical cords, and plug in unit. **Caution: The system must always be plugged into a three conductor, grounded GFI (Ground Fault Interrupt), power source.**

WARNING: Do not place the unit on a slope or where the unit can accidentally fall or roll into water. The lockable wheels provide resistance to movement although do not prevent movement or turn-over.

3. Turn on water supply.
4. On the PolarCool Zone control panel, turn on the pump. This will engage the solenoid valve and allow water to fill the reservoir. The pump itself will not activate until the low water level switch is tripped. (See Figure C, page 7)

IF PADS ARE NEW:

When pads are new, their slick surface will prevent the fast water absorption that will happen with older pads. For this reason, it is important to allow the pump to run for two or three hours with the fan set to low speed the first time new pads are used. This will "soak-in" the pads, and allow faster start-up later.

After soaking new pads, turn off the pump, fan, and water supply, unplug the unit, and drain the reservoir. The reservoir can be drained using the Drain Outlet. This eliminates chemical residues that have washed out of the new pads.

NOTE: Do not allow the pump to run without water in the reservoir. Without water, the pump may be damaged.

Foaming can occur with new pads. If excessive foaming takes place, repeat the procedure described above two or three times to flush chemical residues from the pads. Reducing the water flow to the pads may also be helpful to reduce foaming.

NORMAL OPERATION :

Let the water run for twenty to thirty minutes before turning on fan. This will allow time for the reservoir to fill.

5. Turn on fan and enjoy the cool air output.

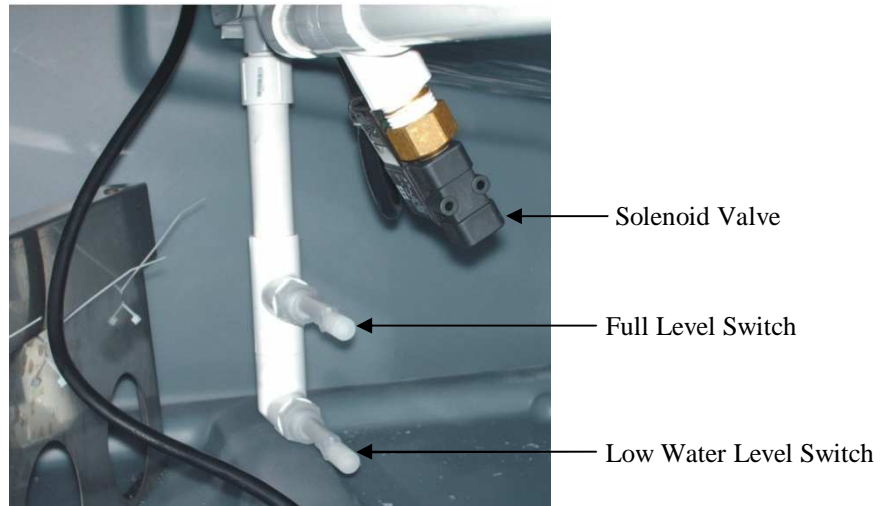


FIGURE C

5.3 Shut Down

When you are finished with the PolarCool Zone, follow these steps for shutting down the unit.

1. Turn off pump.
2. Wait ten to fifteen minutes (This will dry the pad and minimize algae growth).
3. Turn off fan.
4. Disconnect water and power to the unit.
5. If water is not disconnected, **turn off water supply to PolarCool whenever PolarCool is not in use.**

6. Operation

6.1 Ventilation is Very Important

Fresh air is very important for proper operation of evaporative cooling. Ventilation can be provided by air flow from open windows and doors, or exhaust fans. Positioning the PolarCool intake close to an open door is a common way to assure fresh air. Evaporative cooling will not function properly in a closed environment.

6.2 Normal Operation

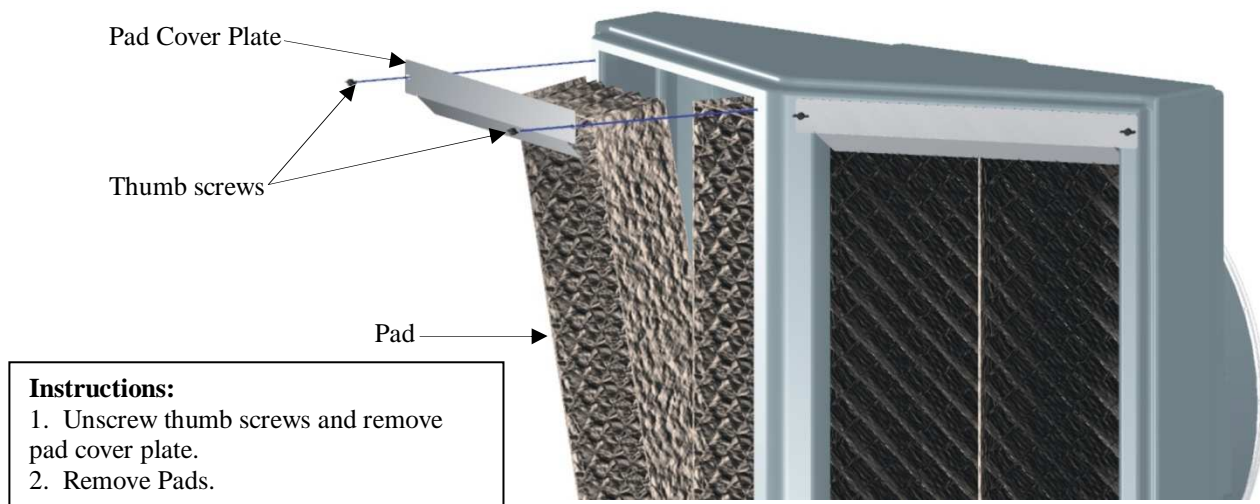
Under normal conditions, the pump should run constantly when air is being drawn through the pads. If outside conditions are not warm enough to run evaporative cooled air, an alternative is to run the fan with the pump off.

Dry the pads completely each night by turning off the pump and drawing air through the pads with the fan.

7. Maintenance

7.1 Maintenance Accessibility

Since evaporative coolers require maintenance, the PolarCool Zone has been designed to make maintenance as easy as possible. By simply removing the pad cover plates and the pads, basically all critical parts are within easy reach for inspection, including the pads, spray bar, pump, strainer, and water reservoir. To open, see figure on the next page.



Pad Removal

7.2 Frequency Of Pad Replacement

PolarCool pads, produced from a cellulose base and impregnated with a plastic resin anti-rot agent, can give years of trouble free operation with proper maintenance (3 to 5 years is typical).

7.3 Extending Pad Life

As you use the PolarCool system, you will notice the need for good preventive maintenance. Algae growth, scale (hard crusty deposits), and dirt accumulation are typical problems associated with poor maintenance. Maintaining the PolarCool is very simple. It only takes a small amount of time and effort. If you follow the guidelines below, your pads will last much longer, and be much more efficient.

7.3.1 Algae

To prevent algae, allow the pads to dry out each day, by running the fan without the pump running until the pads are completely dry (about 15 minutes).

7.3.2 Scale

Scale is a concentration of solids that “plate” the surface of the pads if the water contains too many impurities. Scale formation can be prevented by using water with a pH between 6 and 9 and silica levels below 150 ppm. If this is impractical, scale can be minimized by increasing the drain-off rate. To clean pads, spray pads frequently with water hose.

7.3.3 Dirt and Dust

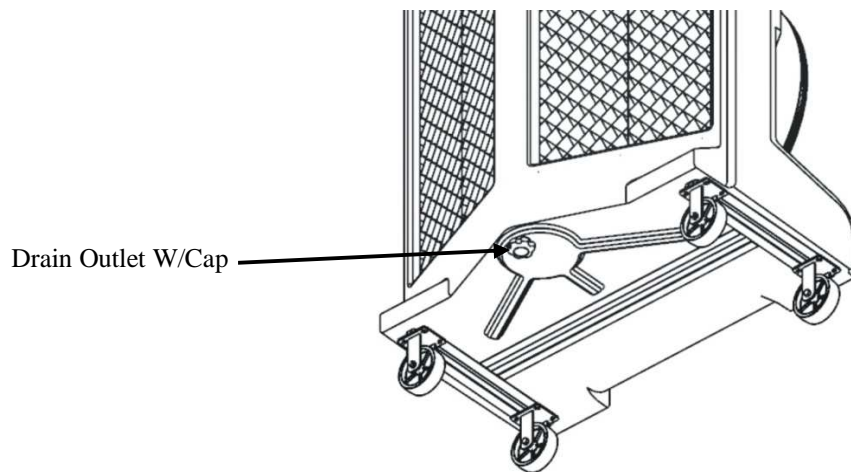
If the pads are allowed to get excessively dirty, they should be removed from the system and washed down with a water hose.

7.3.4 Why Drain Water From The System?

If you have ever left a pot of coffee warming on the coffee maker you know the two principles at work in evaporative cooling systems. First, as the coffee sits on the warming plate, the level of water in the pot goes down. Second, the remaining coffee gets stronger as the water evaporates.

In your cooling system, these effects still apply. As water evaporates, no impurities are carried along. This leaves all sorts of minerals, chemicals, and other impurities behind. The concentration of impurities in the reservoir and system will quickly rise.

Drain the reservoir daily in dusty conditions, and twice a week in clean air.



7.3.5 Water Distribution

Maintaining even water distribution to the pads is the most important way of extending pad life. If an area of pad does not receive enough water, cooling efficiency will be degraded. The **Spray Bar Adjustment Valve** should be increased until the pads are fully wet, but not to the extent that a mist is blown out of the fan.

Dry spots or streaks can also be caused by clogged holes in the spray bar. Investigate by removing the pad cover plates and running a pipe cleaner, or small dowel into the holes in the spray bar to clear any clogged holes. The spray bar end caps may be removed for easier cleaning. Ensure the holes in the spray bar point upward during operation.

7.4 Flushing the Reservoir

The pads and the complete water system should be flushed out at least once a week and the reservoir wiped clean.

1. Turn off the pump, fan, and water source, unplug the unit and drain the reservoir. The reservoir can be drained using the Drain Outlet.
2. Wipe out the reservoir.

NOTE: Do not allow the pump to run without water in the reservoir. Without water, the pump may be damaged.

3. Restore the water source and fill the reservoir.
4. Run the pump for at least 15 minutes.
5. Pump the reservoir out again and refill with fresh water.
6. Start the pump and fan.

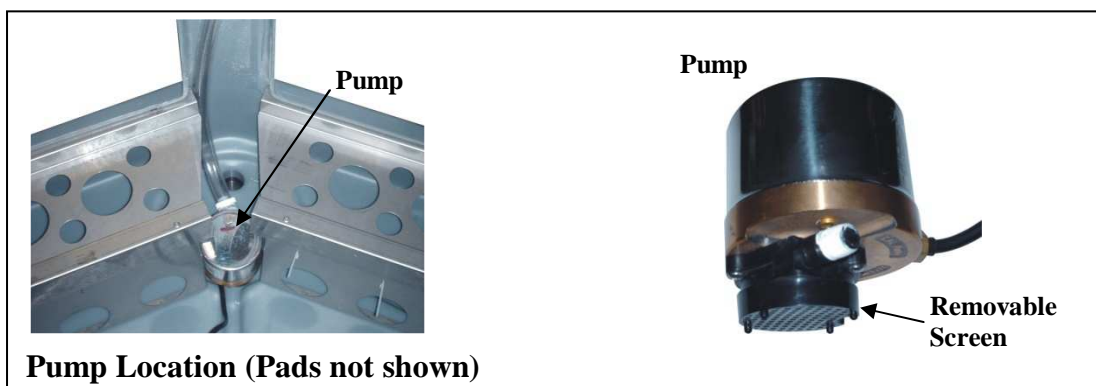
7.5 Cleaning the Pump Filter

The water pump includes a removable plastic filter on the bottom of the pump which should be cleaned weekly when the reservoir is flushed.

1. Turn off the pump, fan, and water source, and unplug the unit.
2. Remove the pump from the reservoir, remove and clean the screen on the bottom of the motor, and reinstall the pump in the same location and method as removed.

NOTE: Do not allow the pump to run without water in the reservoir. Without water, the pump may be damaged.

3. Restore the water source and fill the reservoir.
4. Reconnect power and run the pump for at least 15 minutes.
5. Turn the fan ON.



7.6 Cleaning the Pads

1. Turn off fans.
2. Remove thumb screws on each side of pad cover plates.
3. Remove pad cover plates and remove pads.
4. Hose down each side of pads.

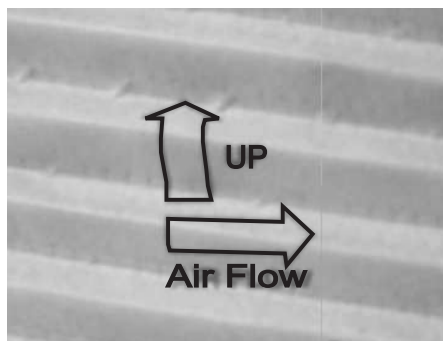
CAUTION: Do Not Use High Pressure Washer To Hose Down Pads!

5. Drain the reservoir.
6. Shut off pump and clean out strainer.
7. Refill reservoir with clean water.

8. Replace pads.
9. Turn on the pump to run fresh water over the pads for about 20 minutes. Use as much water as possible.
10. Gently hose stubborn deposits from the face of the pads.
11. Completely empty the reservoir to remove all the old algae and dirt that will rinse off the pads.
12. Refill with clean water.

7.7 Replacing Pads

1. Remove old pads from PolarCool.
2. Look for Air Flow Diagram on side of new pad. Refer to diagram at right.
3. **IMPORTANT!** Install new pad into PolarCool with Air Flow in direction of arrow and with up arrow pointing UP.
4. Replace all pads as described in step 3.



Pad Orientation

7.8 Winterization

When storing for extended periods:

1. Flush and clean reservoir. Never leave water in reservoir for extended periods.
2. Remove and backwash pads. Remove any debris or deposits from pad.

Remove the drain outlet cap to prevent water accumulation inside the reservoir.

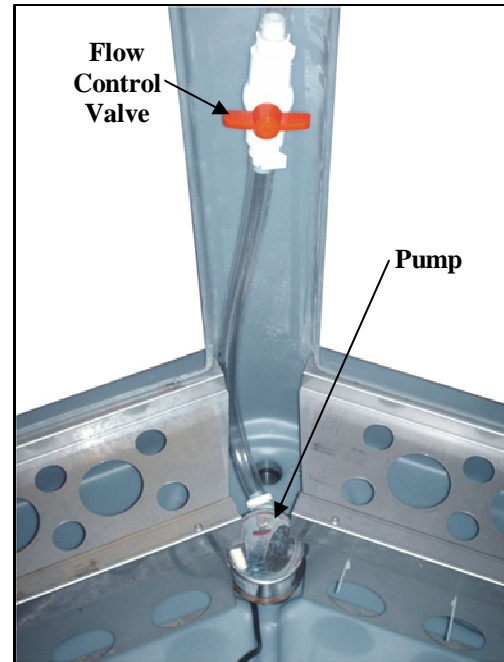
7.9 Flow Control Adjustment

The Flow Control Valve for the PolarCool Zone is shown to the right. Flow adjustments are factory preset, however can be adjusted by the user based upon local water pressure and evaporative conditions at the site. The amount of water flow affects the efficiency and operation of the PolarCool Zone. During operation the flow should be adjusted so that sufficient water soaks the pads, but only enough to completely soak the pads.

If there is too much water flow, the pads become over-soaked - that is, there is more water flow than required for proper evaporation. Surplus water may be sucked into the fan producing a water droplet spray directly in front of the PolarCool. In some cases, if you stand in front of the PolarCool you may feel the water spray! The efficiency of the Polar cool is reduced in this case. If this happens, reduce the water flow.

If there is too little flow, there will not be enough water to fully soak the pads. Dry spots in the pads will be visible. Again, this reduces the efficiency of the PolarCool. If this is the case, increase the flow until the pads become fully soaked.

Adjust the Water Flow as described above. The FULL OPEN and CLOSED positions of the Valve are shown in figures at the right.



Valve Closed



Increase Pressure



Adjust Water Flow

Valve Full Open



8 PolarCool Preventive Maintenance Requirements

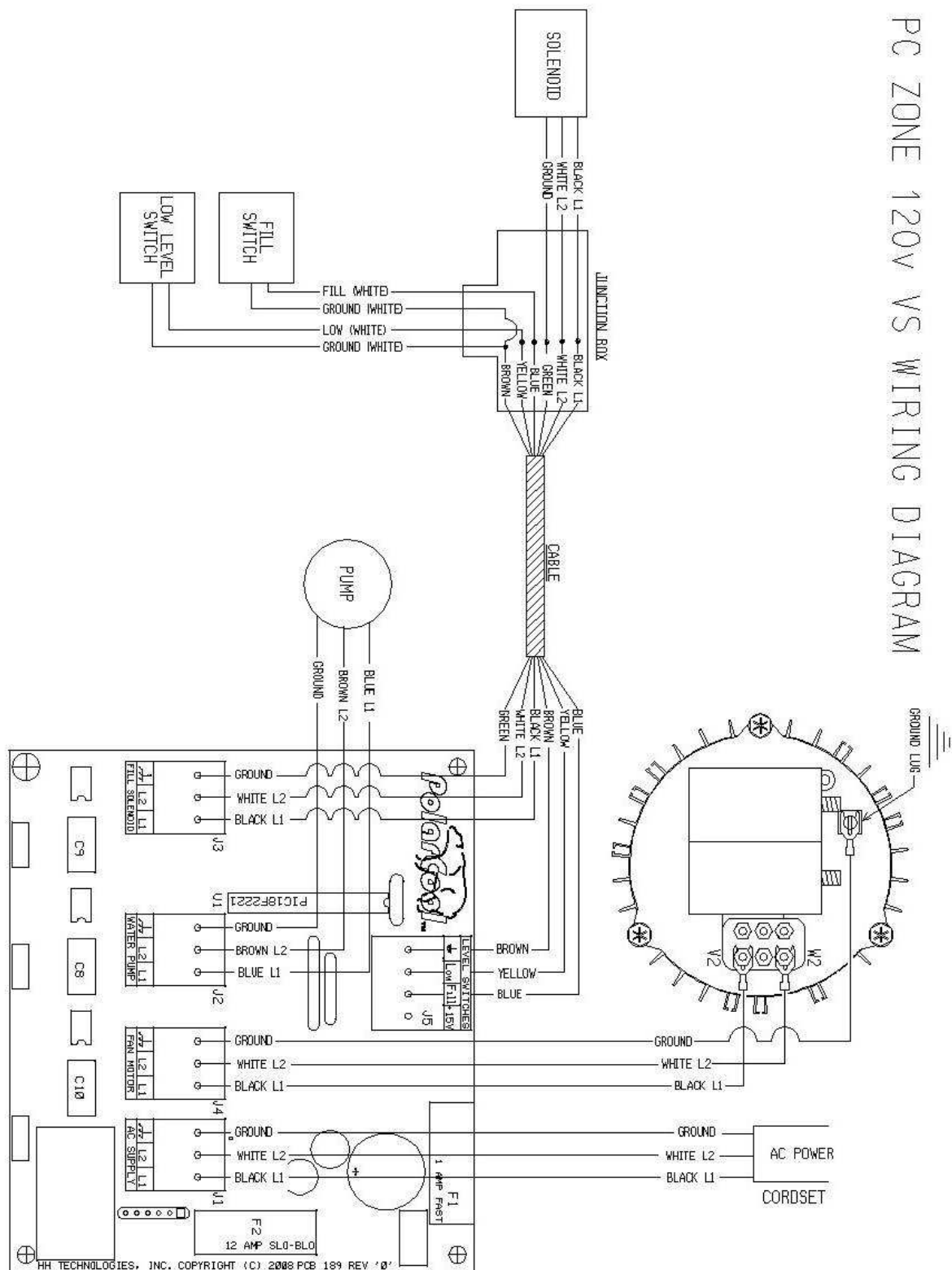
- Flush the system at least once per week and wipe the reservoir clean to prevent damage to the unit.
Refer to Section 7.4.
- Allow the pads to dry out each day, by running the fan without the pump running until the pads are completely dry (about 15 minutes).
- Drain the system during extended shutdowns.
- Disinfect the whole system once per quarter.
- Inspect spray bar for debris in holes.
- Turn off water hose to PolarCool whenever PolarCool is not in use.
- Have the right amount of water running over the pad.
- If power cord extension is necessary, ensure that you use 12 AWG or larger wire.
- Ensure that air is not limited or restricted from entering or exiting the unit.
- Identify and correct leaks in the system.
- Excessive dust, fumes, and harsh cleaners should be avoided.
- Do not use in closed environment. Fresh air is a necessity.
- Do not add chlorine or bleach to water.
- Never use phosphate based water treatment chemicals.

9 Troubleshooting Guide

Problem	Check/Action	Reference Section
Swivel casters will not turn.	Check installation of caster hardware. Hardware must be in the proper order and location.	
Water is splashing off of pads	Pads may be in backwards; Check Flow chart on side of pad.	6.8
Water spraying out from cover.	Ensure the holes in the spray bar point upward into the spray deflector. (Vertical Spray).	7.3.5
Water is not spraying out of ANY spray bar holes.	Ensure pump switch is ON; Check for sufficient water in reservoir; Check the Flow Control Valve; Check screen on bottom of pump for obstructions.	6.5 and 6.9
Water is not spraying out of SOME spray bar holes. Excessive dry streaks in the pads.	Adjust spray using the Spray Bar Adjustment Valve, the spray bar should be cleaned, OR the pump screen should be cleaned. Remove spray bar and clean the bar and all holes.	4.2, 6.5 and 6.9
Fan motor doesn't turn ON and no sound from the motor.	Check PolarCool Switches, power cord, GFCI outlet, and circuit breaker.	
Motor overheats and shuts off then restarts minutes later.	Extension cord gauge is too small or the air passage is blocked or partially obstructed.	
Pump does not work.	Check for low water-level and low-level switch.	4.1 and 4.2

10 Wiring Diagram

36" PC ZONE 120V VS WIRING DIAGRAM



11 Replacement Parts List

Part Description	Part No.
Cooling Pads	0050-9601
Complete Pad Set	6450-6014 (4)
Water Pump	6422-0506
Fan Motor	3017-5600
Fan Prop	6403-5600
Fan Guard (PVC Coated)	6403-0000
Solenoid Valve	1009-0000
Control Board	6407-1624
Drain Cap	0006-0001
Liquid Level Switch	3001-0050
3 Position Connector	3006-5082 (2008 and newer models)
Low-Level Switch/Harness	3001-0050 (2008 and later models)
Swiveling Caster Tire	1065-0100
Rigid Caster Tire	1065-0101
Cord Set	1902-4700
Large Front Label	4501-6310
Small Side Label	4501-6308
Control Panel Label	4501-6306
Operation and Maintenance Label	4501-6307
Rubber Seal - Control Box	1028-3500
Inlet Label	4501-0212

