



Kwikool™

PORTABLE COOLING SYSTEMS

Portable Heat Pumps Operation Manual

PHP
PORTABLE HEAT PUMPS



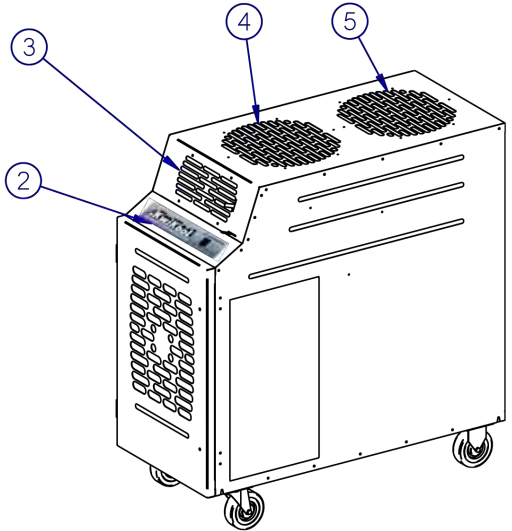
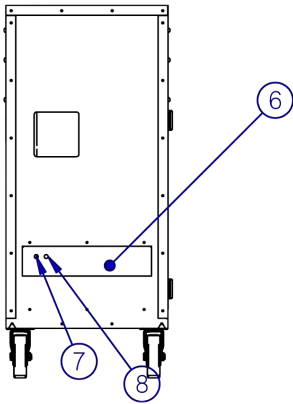
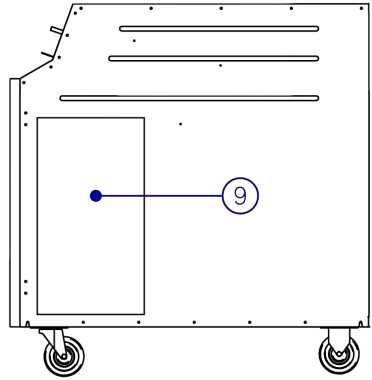
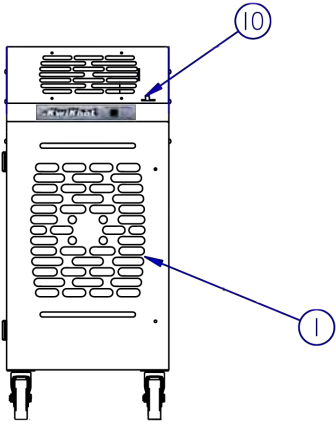
KwiKool KPHP Series Operation Manual

Table of Contents

- Section I / Unit Components - Page: 3**
- Section II / Assembly and Installation - Page: 4-6**
- Section III / Operational Safeguards - Page: 6**
- Section IV / System Operation - Page: 6-9**
- Section V / Built In Safeguards - Page: 9-10**
- Section VI / Application Requirements - Page: 10-11**
- Section VII / Maintenance - Page: 11**
- Section VIII / Utilizing Your KwiKool System - Page: 11**
- Section IX / Fault Codes - Page 11**
- Section X / KPHP Troubleshooting Guide - Page: 12-15**

Before installing and using your KwiKool Portable Cooling/Heating System, read this manual carefully for instructions and proper usage and all safeguards. This manual should be retained for future reference.

I / Unit Components



Legend

- | | |
|-------------------------|--------------------------|
| 1. Cold Air Return | 6. Cord Storage |
| 2. Control Pad | 7. Condensate Nipple |
| 3. Cold Air Supply | 8. Condensate Alarm Jack |
| 4. Condenser Air Inlet | 9. Access Door |
| 5. Condenser Air Outlet | 10. Vent Control |

II / Assembly and Installation

- A. Air Chutes (If equipped or as an optional accessory)** - Install supply air flanges to the front of your KwiKool unit above the control panel. (See instructions in the air chute kit for specific procedures).



Air Chutes - Conditioned air supply, if equipped or as an optional accessory.

- B. Condensate Tank** - KwiKool systems come standard with an external 5-gallon condensate tank. The external condensate tank is equipped with a float switch that shuts your KwiKool down and alerts operators with an alarm and display **CF** ("Condensate Full") when the condensate tank is full. This prevents accidental water overflow on the floor. The alarm will clear automatically upon emptying the 5 gallon tank and reconnecting it. If connecting to a permanent drain, do **NOT** connect or use the equipped tank. To use the external condensate tank, remove the factory installed condensate float switch bypass plug on your KwiKool unit and install the male connector jack supplied on the condensate tank. Next connect the factory supplied 1/4" ID condensate tubing to the 1/4" OD barbed condensate water outlet on the back of your KwiKool and connect the discharge end of the tube to the 1/4" barbed connector on the condensate tank. The condensate float jack must be inserted into the female condensate jack to operate your KwiKool. **CF** displays if the jack is not connected or the bypass plug is not inserted properly.



Condensate Tank - 5-gal Condensate Tank with float assembly for automatic cutoff.

Condensate Water Outlet - 1/4" OD barbed fitting

Cord Compartment



Condensate Float Switch Jack - Connects to the condensate tank or is bypassed by the factory installed male bypass switch plug pictured

Power cord with plug - available on 1.1-ton thru 2.5-ton models

C. Ceiling Kit (Optional Accessory) - The ceiling kit is comprised of flanges with foam tape, fasteners, two (2) eight foot lengths of flexible duct, duct clamps, and one 24"X24" replacement ceiling tile for KPHP1811 and KPHP2211.

Follow these installation steps:

1. Align the holes of the flange to the holes located on the top of the unit. Attach to the top of the KwiKool unit using the factory supplied fasteners.
2. Attach each duct to the flanges on the replacement ceiling panel(s); secure the duct to each flange using the supplied clamps.
3. Install the replacement ceiling panel(s) in the ceiling grid with the duct attached, connect the open end of the duct to the flanges on your KwiKool and secure with supplied clamps. Be sure the area where you are ducting can absorb the discharge air and is open enough to keep the system from returning its own discharge air. Your KwiKool must have fresh make up air going to the condenser to operate.

4. ****For Ceiling Kit Users**** - The standard two duct ceiling kit (CK12) is recommended to be used with KPHP models for optimum performance. KwiKool's KPHP systems may be used for primary, supplemental or standby cooling or heating. Using KwiKool's exclusive ceiling kit ensures that you are able to utilize 100% of the units rated capacity and without creating a negative pressure in your conditioned space. KwiKool's exclusive IO integral condenser system isolates both the condenser discharge air and the condenser make up air from the conditioned space.

****Note:** The space where the make up air and discharge air is directed (normally above a drop ceiling) must be well ventilated and large enough for the discharge air to be absorbed. Discharge air is prevented from entering the make up air inlet by way of a factory installed deflector on your Ceiling Kit. Make sure that the deflector is on the discharge (rear) duct from the unit. However if the condenser discharge and return space is unventilated, closed off or unable to handle the discharge air, the make up air will return the discharge air. This will lead to the unit tripping its high pressure safety switch while in cool mode. If this occurs, you will get an "HP" on the control panel. To resolve, fix the lack of make up air and reset the high pressure switch per the instructions in the Troubleshooting Guide section. If in the HEAT mode and ducted into a confined space you will notice diminished performance, rapid supply air cycling and/or coil freezing. Additionally, the ceiling kit replacement panel is not limited to ceiling use and may be placed or fastened to any vertical or horizontal surface providing the discharge and make up air is able to be directed to the space where it is mounted. For areas with a closed ceiling or no ceiling use the double flange ceiling kit method or extended duct method.

Visit www.KwiKool.com for more information and a complete set up guide.



Ceiling Kit - Discharge Outlet (Condenser exhaust) & Discharge Make Up (Fresh Air Inlet)

- D. Power Connection** - Verify that the source power, phase and breaker size is compatible with your KwiKool serial plate information and that the electrical circuit is dedicated only for the use of your KwiKool Unit. If you aren't sure about your power, contact a licensed electrician. KwiKool systems are factory equipped with 8 feet of power cable sized to meet the power requirement of your system. Extension power cable is allowed but cannot exceed 25' and must be rated to operate your KwiKool. KwiKool units that come supplied with a factory installed plug require the exact receptacle to match the plug and exact circuit size and power. Cutting the power plug on your KwiKool unit will void its warranty.

III / Operational Safeguards

Read the following safeguards carefully before installing your KwiKool:

- A.** Do not operate or install your KwiKool unit in a potentially explosive, combustible, or corrosive gas atmosphere.
- B.** Keep your KwiKool system away from flammable materials and open flame.
- C.** To avoid electrical shock keep your KwiKool system away from direct contacts with water and any liquids and do not touch your system with wet hands.
- D.** To insure your KwiKool system is stable, the floor on which the system is to be placed should be level, free of vibration and strong enough to support the weight of your KwiKool model.
- E.** Do not move the system while it is operating. Before moving the system, first turn system to OFF then unplug the system from the power source. Then unlock casters.
- F.** Do not tilt or overturn your unit, since this could damage the compressor.
- G.** Do not place objects on top of your unit.
- H.** Do not insert your hand or any other object into the air supply chutes.
- I.** Do not operate your KwiKool system with its service doors open.
- J.** If your KwiKool system makes abnormal noises or vibrations, call KwiKool at 1-800-594-5665.

IV / System Operation

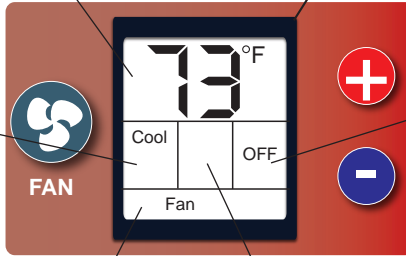
- A. Apply Electrical Power** - Once power is engaged by plugging in your system and/or switching the breaker to the on position, your KwiKool display will come alive and show the current room temperature. The unit is set to OFF and the fan is set to the default position. A 2 minute time delay starts, indicated by a flashing F on the display. If you are not seeing anything on the display, refer to the Troubleshooting Guide section of this manual.

B. Control Panel - The control panel display shows the current operational status of the unit.



Display Shows - Current Temperature, Set Temperature, or Alarm Codes

Display Shows - Unit Mode Cool / Fan



Display Shows - On / Off

Display Shows - Fan Mode

Display Shows - Fan Speed (except single speed)

- 1. ON/OFF Button** - Pressing this button on your control panel engages or shuts down your KwiKool system. All settings selected are stored in the microprocessor board even if the power is lost including the ON/OFF selection. Refer to the Troubleshooting Guide section of this manual if your KwiKool is alerting an alarm after selecting ON.
- 2. MODE Button** - Depressing the MODE button selects your choice of operations. **Cool**, for cooling with compressor operation. "Cool" will flash when the compressor is running. "Cool" will not flash when the room temperature is equal to or lower than the set temperature or the system is timing out. **Heat**, for heating with compressor operation. "Heat" will flash when the compressor is running. "Heat" will not flash when the room temperature is equal to or higher than the set temperature or the system is timing out. **Heat/Cool** mode when conditioning is required in applications with changing load requirements. The system automatically selects the mode based on the set point and flashes the current operating function unless the set point is satisfied or the system is timing out. **Fan**, for air circulation without compressor operation.
- 3. F/C** - Selects the way that room temperature and set point are displayed on the control panel. Choices are Fahrenheit or Celsius. F is the factory default. This indicator will flash when the system is in "time out" to prevent compressor short cycling.
- 4. Fan** - Pressing the fan key cycles the supply air fan between auto fan and fan on. When the system is in auto fan, the supply air fan only operates when the compressor is running. When the fan is set to on, the fan runs continuously as long as the unit is in the ON position. The fan speed window will be blank on these models.

NOTE: Operations of KPHP systems will not have control of the supply air fan when in Heat Mode, the supply air is controlled by a pressure switch to optimize the systems operation and this switch overrides the microprocessor selection. It is normal for the supply air fan to delay in starting and to cycle on and off in the Heat Mode.

- 5. Up (+) and Down (-) Arrow Buttons** - Raises or lowers the desired set temperature. When changing the set point, pressing the + or – key, the word SET will appear on the display and the current set point flashes ON and OFF. The value of the set point is changed 1 degree each time the + or – is pressed. The adjusted set point flashes on and off 12 times after the last change and then returns to display the room temperature.

NOTES:

- Lowering or raising the set point will not change the temperature of the supply air. For best results always adjust the set point to a temperature your KwiKool can cycle on and off at to avoid operational issues such as freezing or rapid fan cycling, KwiKool systems are designed to maintain the set point when sized properly and constant operation without achieving the set point may shorten the expected operational life of your system.
- In Cool Mode the lowest set point temperature available for your KwiKool is 60 degrees F, and the highest setting is 95 degrees F. The control will not allow adjustments beyond these ranges.

C. System Operation -

- 1. Turn On Your KwiKool System** - Pressing the ON/OFF button once on your control panel will put your unit in the ON position and "ON" will be displayed on the right side of your display as well as the previously chosen mode.
- 2. COOL** - If the unit was previously set to the cooling mode (cool) then "cool" will be displayed. If the compressor is running, the "cool" on the display will be flashing. If your unit has been sitting for over 2 minutes, this should happen immediately upon turning the unit on, unless your set point is lower than the current room temperature. In this case your unit is ready to automatically turn on once the temperature rises above the set point. If the unit was recently turned off or the unit turned itself off because it reached the set point, the compressor will not turn on until the system waits for approximately 2 minutes. This prevents the compressor from being damaged do to a condition called short cycling. The indicator that the unit is in the "time out" condition is that the F (or C) in the display will be flashing. When the compressor starts, the F will stop flashing and the "COOL" will begin flashing. Note that the condenser fan will not start immediately with the compressor. And once the condenser fan kicks in and if the ambient temperature entering the make up air for the condenser return is below 75 degrees F you may notice the fan cycling on and off, this is normal. If the display flashes 99, this indicates ambient temperature of 99 degrees F or more. This is normal and will stop flashing when the ambient temperature falls below 99 degrees F.
- 3. HEAT** - If the unit was previously set to the Heat Mode then "Heat" will be displayed. If the compressor is running, "Heat" on the display will be flashing. If your unit has been sitting for over 2 minutes, this should happen immediately upon

turning the unit on, unless your set point is higher than the current room temperature. In this case your unit is ready to automatically turn on once the temperature drops below the set point. If the unit was recently turned off or the unit turned itself off because it reached the set point, the compressor will not turn on until the system waits for approximately 2 minutes. This prevents the compressor from being damaged do to a condition called short cycling. The indicator that the unit is in the "time out" condition is that the F (or C) in the display will be flashing. When the compressor starts, the F will stop flashing and "HEAT" will begin flashing. NOTE: that the supply air fan will not start immediately with the compressor and once the supply air fan starts and air is blowing in and if the ambient temperature entering the make-up air for the return is below 75 degrees F you may notice the supply air fan cycling on and off, this is normal. The colder the temperature is the longer the off cycle will be.

4. **HEAT/COOL** - If the unit was previously set to the Heat/Cool mode then "Heat & Cool" will be displayed. The system functions as described above in the mode required based on a 2 degree temperature differential. Your KwiKool automatically selects the mode needed to maintain the set point, and the operating function flashes on and off while operating and the standby mode stays solid.
5. **FAN** - If the unit was previously set to the fan mode then "FAN" will be displayed and the supply air fan will start to run.

V / Built in Safeguards

KwiKool is proud to provide its customers with high quality features and safety devices that are not found in most other brands.

- A. Time Delay** - Protects your KwiKool from potential damage by delaying the compressor from starting before the pressures in the mechanical system equalize. This always activates when your KwiKool cycles off, is turned off, power is lost and then restored or the operational mode is changed. Display flashes C or F if the time delay is activated.
- B. Fan Cycling** - Part of your KwiKool limited freeze protection and works by regulating the air flow to keep the refrigerant pressures at the optimum range.
- C. High-Pressure Switch and Alarm** - Protects your KwiKool System from potential damage to the mechanical system by shutting down, sounding an audible alarm and displaying a fault code (**HP**) when the system pressure exceeds safe operating conditions. The high pressure switch is a manual reset switch and must be reset after the switch is activated and the condition causing the trip is corrected.
- D. Low Pressure Switch and Alarm** - Protects your KwiKool from potential damage to the mechanical system by shutting down the system, sounding an audible alarm and displaying a fault code (**LP**) when the low side pressure is too low. This is normally caused by low refrigerant charge. This switch is an automatic reset.
- E. Automatic Restart** - In the event of a power loss your KwiKool System resumes operation when the power is restored. All operational functions are preserved in the memory of the Microprocessor Board including the ON/OFF selection.
- F. Condensate Pump & High Level Alarm** - All KPHP models are factory equipped with an internal high lift condensate pump. KwiKool condensate pumps are able to pump

the condensation either to the factory supplied condensate bottle, or to a drain or other location as required by the application. The internal pump is rated at 20 foot of head pressure. This means it can pump water to a maximum of 20 feet vertically. Each pump is equipped with an overflow safety cut-off that automatically shuts your KPHP unit down, sounds an audible alarm and displays a fault code (CP). This prevents accidental flooding of the conditioned space.

- G. Condensate Tank & High Level Alarm** - All KPHP models come standard with an external condensate tank. The tank is equipped with an overflow safety cut-off. When the tank is full, the safety will automatically shut down your KPHP systems, sound an audible alarm and display a fault code (CF) This prevents accidental flooding of the conditioned space. If you are using the supplied bypass plug and not using the tank this alarm is nonfunctional.
- H. Service Ports** - Located in the filter access compartment in the front of your KwiKool below the control panel. This gives service personal a connection point for service gauges to monitor the operating pressures of your KwiKool KPHP refrigeration system.
- I. Sight Glass/Moisture Indicator** - Located in the discharge air make up inlet. This feature allows operators and service personal to view the condition of the refrigerant returning to the evaporator coil. Used as a diagnostic tool by qualified personal.

VI / Application Requirements

- A. Air Temperature Requirements Cooling** - The environmental requirements of your KwiKool unit at the installation site are 60 to 110 degrees F for the condenser make up air located on the front inlet on the top of the unit. **If the unit is operated in an environment above 110 F** the high pressure switch may trip, stopping the unit's compressor. You also may notice diminished performance. The High Pressure Switch type is a manual reset. The reset switch is located in the Return Air grill filter compartment. Reset the unit by pressing the button labeled HP Reset. **Standard air-cooled KwiKool models are not designed to operate at temperatures below 60 degrees F. in cooling mode. Low-ambient temperature controls must be special ordered at an additional cost.** Temperatures below 60 degrees F will cause the discharge air exhaust fan to cycle excessively and may damage the fan cycling switch, which requires qualified service personal to repair and can void your warranty.
- B. Air Temperature Requirements Heating** - The environmental requirements of your KwiKool unit at the installation site are 40 to 80 degrees F for the supply air located on the front of the unit. **If the unit is operated in an environment above 80 F** the high pressure switch may trip, stopping the unit's compressor. You also may notice diminished performance. The High Pressure Switch type is a manual reset. The reset switch is located in the Return Air grill filter compartment. Reset the unit by pressing the button labeled HP Reset. **Standard air-cooled KwiKool models are not designed to operate at temperatures below 40 degrees F. in heat mode.** Temperatures below 40 degrees F will cause the supply air fan to cycle excessively and may damage the fan cycling switch, which requires qualified service personal to repair and can void your warranty.
- C. Capacity & Temperature Settings** - Sizing of our units is based on matching capacity to a specific heat load while maintaining a 72 degree F temperature. In order to maintain temperatures at 72 degrees F, the unit must have correctly sized capacity.

D. Positioning of Unit - Do not place your KwiKool unit in direct sunlight. The unit should be positioned so that the output of the unit can be focused as close to the load source as possible with the front grill fully exposed. Do not block the front of the unit, since this will cause a restriction in the airflow, can cause low performance and other operational issues discussed in the troubleshooting section.

VII / Maintenance

Your KwiKool unit comes from the factory with air filters installed on the evaporator inlet to prevent dust and debris from entering the system and circulating in the conditioned space, factory installed filters are a disposable type and must be periodically checked and replaced based on the air quality of your conditioned space. **Failure to maintain the filters will cause restricted air flow and low overall unit performance.** The air filter is located on the front of your KwiKool unit below the control, release the 2 slotted fasteners on the access door to open.

VIII / Utilizing your KwiKool System

In contrast to conventional air conditioners, which circulate air conditioning capacity evenly to an entire floor, KwiKool systems are designed for conditioning an area that needs heating and/or cooling in a concentrated area. Understanding the capabilities of your KwiKool can help you avoid problems. For example, if you add heat-generating equipment to the room after purchasing a KwiKool system, you may be short of the necessary cooling capacity. Your KwiKool system offers an effective affordable solution for many applications. It can also provide spot cooling for workers or process cooling within a large space without the use of condenser ducting, such as a warehouse factory, or production areas. If the system is used in this manner, the cold air supply must be within 5 feet of the person or equipment being cooled, since the hot ambient air will mix with the cool air very quickly. Your KwiKool system is specifically designed to adapt to today's high tech environments such as telecommunication or computer rooms and is equipped with the necessary controls to maintain those special environments. Call your nearest KwiKool Distributor or 1-800-594-5665 for help or for questions about other applications.

IX / Fault Codes

Your KwiKool Iceberg System incorporates a self-diagnostic system that sounds an audible alarm, stops your system and displays a fault code to indicate the nature of the problem on the display panel. See the troubleshooting guide later in this manual for further information.

CF = Condensate Tank Full

CP = Condensate Pump Fault

HP = High Pressure Switch Tripped

LP = Low Pressure Switch tripped or tripping

A1 = Phase Monitor Senses power problem (if equipped)

FP = Freeze Protection

X / KPHP Troubleshooting Guide

Fault	Possible Cause	Possible Solution
Unit displays CF , Audio alarm fails to clear on start up or while operating	External Condensate Tank is full. Condensate bypass jack or condensate float switch jack is not installed or not positioned correctly. Water level switch is engaged	Empty External Tank (if using). Make sure tank is upright and level. Unplug bypass plug or tank plug and reinstall to assure good connections. System automatically resets when fault condition is corrected.
Unit Displays CP and Audio alarm is sounding during start up or while operating.	Microprocessor board has detected high water level in the condensate pump.	Inspect condensate pump for over flow and proper operation, check condensate line for a clog or crimping. Resets automatically upon fault correction, or call 1-800-KwiKool if the problem persist.
Unit Displays HP , Audio alarm is sounding during start up or while operating.	Microprocessor board has detected high pressure. The High Pressure switch is tripped.	High pressure is normally caused by reduced condenser air flow. In Cool Mode check for restriction in ducting. Check condenser motors and/or blowers for proper operation. In Heat Mode be sure the service door is closed, check the air filter for blockage and be sure that the return air flow is unrestricted and the supply air fan is operating. High pressure is a manual reset type. To reset, open filter door. The button is located above the filter. Press button to reset (you should feel a click).

Fault	Possible Cause	Possible Solution
Unit Displays LP , Audio alarm is sounding during start up or while operating.	Microprocessor board has detected low pressure. This alarm might cycle on and off.	Check air filter and replace if dirty. Make sure nothing is blocking the filter inlet. Check for icing on coil. Resets automatically when fault condition is corrected. Call 1-800-KwiKool if condition continues.
Unit Displays A1 , Audio alarm is sounding during start up.	Phase Monitor (if equipped) has detected incoming power issue.	Adjust Phase Monitor as needed to match incoming power.
Audio alarm fails to clear on start up or while operating, unit displays FP .	Microprocessor has detected freezing on the evaporator coil if the system has a factory installed freeze sensor. (Special order)	Check for freezing on the evaporator coil and turn the system off to let it thaw out, call 1-800-KwiKool if your system is not equipped with a freeze sensor. Auto resets upon correction.
System is ON and display is showing ON but unit is not supplying conditioned air.	System is in time out (F or C is flashing), set point is satisfied below or above room temperature in selected mode or control is adjusted out of operating parameters or not in the correct operational MODE .	Wait 2 minutes, review System Operations guide.
System is ON but the microprocessor board resets the time delay (flashing F or C) when the compressor attempts to start.	Microprocessor board detects voltage drop below operating parameters.	Confirm the integrity of your source power, check for proper wire size and length of power extension cable. Be sure the circuit is dedicated to only the operation of your KwiKool.
Power is supplied but control is blank	Low voltage circuit is not engaged	Check source power breaker and verify incoming power to connector. Call 1-800-KwiKool for assistance.

Fault	Possible Cause	Possible Solution
System trips breaker on start up	Incoming power is incorrect, breaker is undersized or faulty, and/or extension power cable is too long and or undersized.	Verify the circuit and power cable is within the systems specifications, consult with your electrician or call 1-800-KwiKool for guidance.
System starts up and operates in the chosen mode but the condenser discharge air exhaust fan stops and starts in cool mode or in heat mode the supply air fan starts and stops.	Normal operating condition especially in low temperatures.	No action required, see sections IV C. 2 & 3 Note: To avoid excessive fan cycling, return air must not be below the specifications of your KwiKool system.
Display shows 32 and unit will not turn on cooling.	No connection of temperature sensor to Microprocessor. Temperature Sensor malfunction.	Call 1-800-KwiKool for instructions.
Supply air flow is limited, and or water is dripping from the front of the system	Supply or return air is blocked or restricted, and or the evaporator coil is freezing.	Verify that supply and return air are not blocked and duct work is installed to specification, remove or add duct as needed, check air filter for blockage.
Condensate is not pumping.	Water is below pumping level, external line restricted, line installed with too high of lift.	Reservoir fills, and then pumps. Check for line crimping or restrictions and proper line run height. Refer to the user guide Section 5: Built in Safeguards.
Evaporator coil is freezing	Low or restricted air flow. Undersized capacity, unit constantly on, unable to achieve set point. Low return air temperature out of factory specifications. Evaporator door open, mechanical system malfunction.	Direct supply return air to area of highest heat load, check for blocked air flow from the supply air, replace air filters, adjust set point to allow the unit to cycle, add another KwiKool system or larger capacity model, close evaporator compartment door. Install service gauges to view pressures. Call 1-800-KwiKool

Fault	Possible Cause	Possible Solution
Chatter or hum is heard from the control box while the system is operating.	Incoming source power is poor or low voltage component is faulty.	Check for proper voltage selection on 208/230 volt units, remove excess or undersized power cable, and check incoming power. Call 1-800-KwiKool.
99 Flashes on display	Ambient room temperature over 99 degrees F.	Unit is working properly. Lowering of room temperature will rectify the flashing.
Temperature below 60 Flashes on display in Cool Mode.	Ambient room temperature under 60 degrees F.	Limits of unit have been reached in cool mode. Operating temperatures are 65 - 105 degrees F.



Revision 1017016