



## KPAC-II SERIES PORTABLE AIR CONDITIONERS



## OPERATION MANUAL

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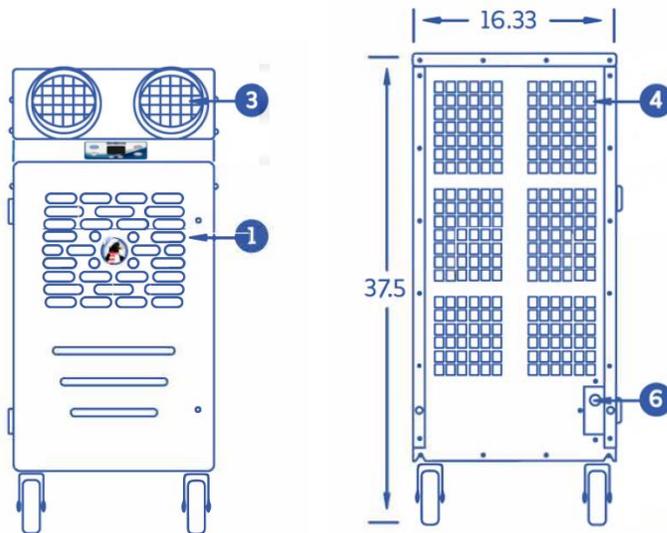
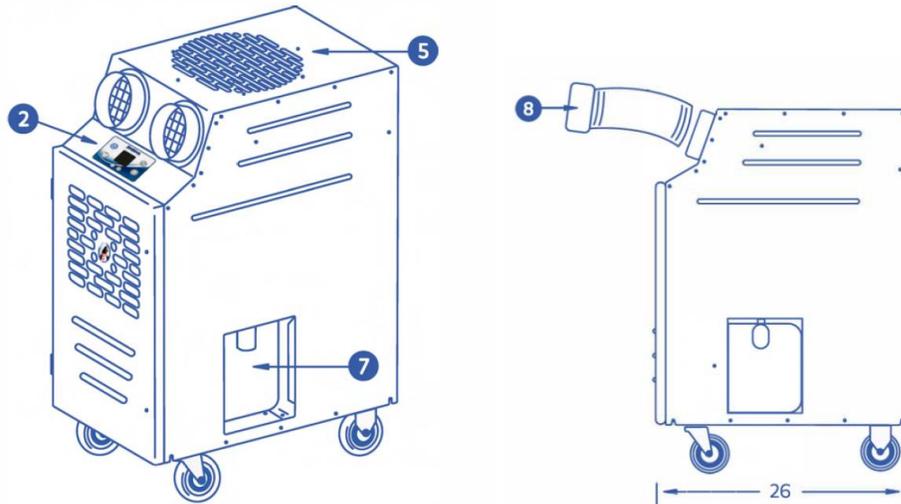
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## SECTION I UNIT COMPONENTS

*Before installing and using the KwiKool KPAC II Series Portable Air Conditioner, read this manual carefully for instructions and proper usage and all safeguards. This manual should be retained for future reference.*

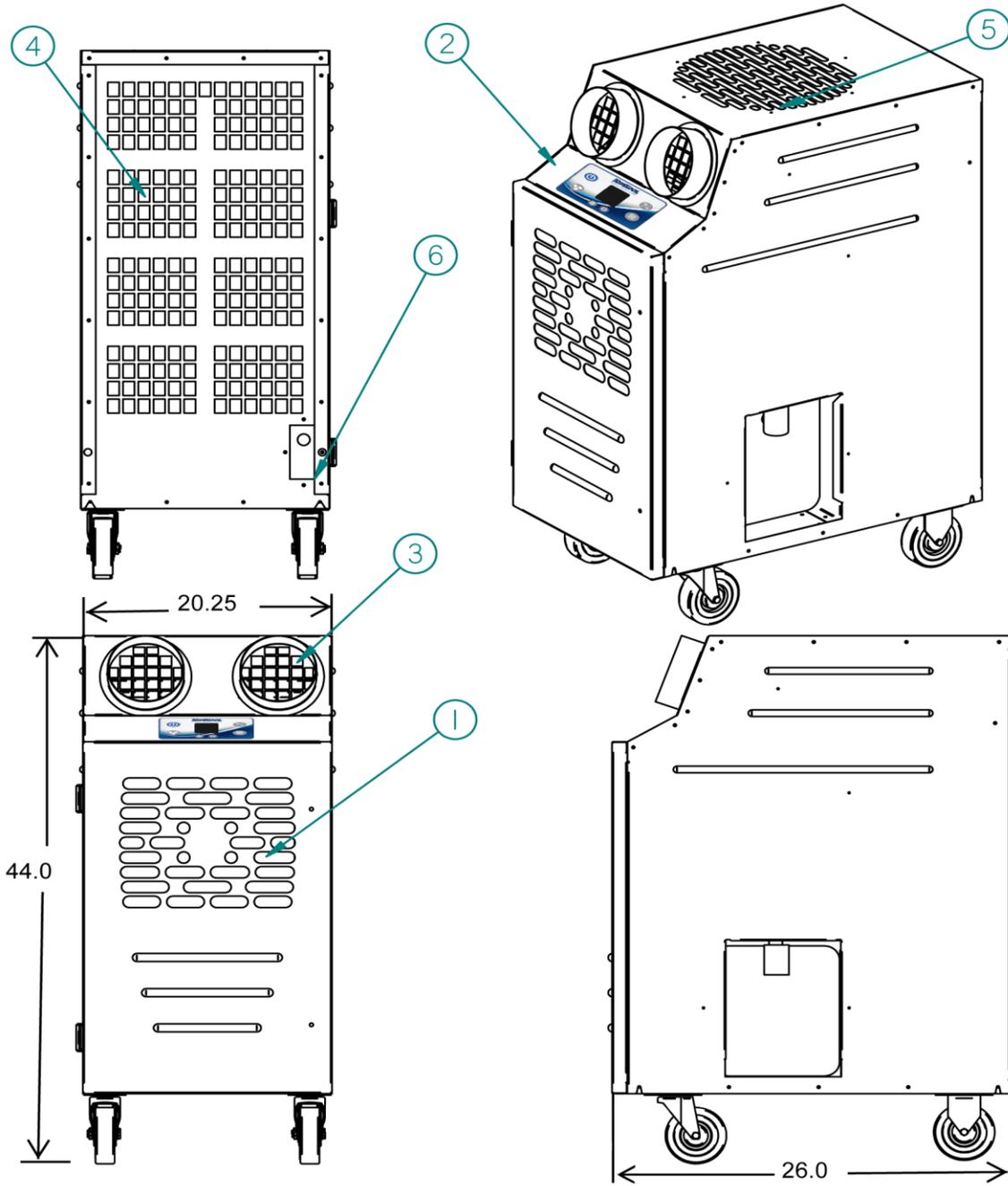
KwiKool KPAC II Portable Air Conditioners are designed to remove heated air from a specific area. The systems use flexible air chutes (standard feature) to supply cool air and an optional ceiling kit can be used to send the hot air up through the ceiling or to another space. The three models have capacities of 1.1 ton, 1.5 ton and 2 tons.

### KPAC-II PORTABLE AIR CONDITIONERS, MODELS 1411, 1811, 2421



#### KPAC 1411-2

- |                        |   |
|------------------------|---|
| 1) Cold Air Return     | 5) Condensate Air Outlet                  |
| 2) Control Pad         | 6) Power Cord                             |
| 3) Cold Air Supply     | 7) Condensate Tank                        |
| 4) Condenser Air Inlet | 8) Air Chutes (Attach To Cold Air Supply) |



### KPAC 2421-2

Legend

- Cold Air Return
- Control Pad
- Cold Air Supply

- 4. Condenser Air Inlet
- 5. Condenser Air Outlet 14"
- 6. Power Cord

## SECTION II INSTALLATION AND ASSEMBLY

### A AIR CHUTES (STANDARD EQUIPMENT)

Install Supply air flanges with the supplied fasteners to the front of the KPAC-II unit above the control panel. Use the supplied clamps to attach the air chutes to the collars. See instructions in the air chute kit for specific procedures.

### B CONDENSATE TANK

KPAC-II systems come standard with an internal 2.5-gallon condensate tank. The internal condensate tank is equipped with a float switch that shuts down the KPAC-II unit and alerts operators with an alarm and displays **CF** (“Condensate Full”) when the condensate tank is full. This prevents accidental water overflow on the floor.

The alarm will clear automatically upon emptying then reconnecting the 2.5-gallon tank. To continue operation of the KPAC-II, the collection bottle must be removed, emptied and then re-installed. Turning the KPAC-II to **OFF** will stop the audible alarm.



The following steps are those needed to empty the tank and reset the alarm.

1. Remove the float switch jack by pulling it straight back, then remove the condensate bottle by pushing the front of the bottle slightly downward and then pull the bottle out.
2. Remove the cap threaded onto the bottle by turning it counterclockwise
3. Empty the collected water
4. Put the cap back on the bottle by turning it clockwise taking care not to cross thread the cap upon installation
5. Tighten the cap to the point where the angle connector on the condensate bottle lines up with the nipple extending out from the drain pan on the KPAC-II and insert the bottle by pushing down slightly to clear the extended drain pan nipple. Be sure the drain pan nipple is inside of the angle connector and the cap is snug and not cross threaded to avoid water leakage.
6. Install the float switch jack by pushing it straight in and confirm the pin is fully inserted or the alarm will not clear.
7. Continue normal operation.

### C FOR CEILING KIT USERS - SINGLE DUCT CEILING KIT

KPAC-II models can use this method when conditioning a space, adding supplemental conditioning, process conditioning and comfort conditioning. 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 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.

### NOTE

*To fasten the duct to the exhaust port collar, using the “chinch” strap, thread the strap through the bottom side of the buckle and squeeze the tab to open the clamp of the buckle. The strap is then pulled as tightly as possible through the buckle and the clamp is released to hold the strap in place.*

### CAUTION

*The area where the Discharge air is directed must be open to a space that is well vented or large enough to absorb the load without pressurizing and coming back into the conditioned space. Discharge Make-up air will come from the conditioned space and create a negative pressure in the conditioned area.*

1. The KPAC-II is placed in the area being conditioned.
2. Line up the flange included with the ceiling kit with the corresponding holes in the top of the system and use the included fasteners to mount the flange. Discharge air is moved from the space thru ducts connected to the condenser discharge air flange on the KPAC-II.
3. Then clamp the duct to the ceiling panel (the ceiling panel is typically used in drop ceilings).
4. A 24”X24” space is opened in the ceiling grid and the replacement panel with the duct attached to the ceiling kit flange is installed. Then clamp the duct onto the top of the KPAC.
5. Determine if the application can tolerate this condition. The KPAC-II must have fresh Make-up air to the condenser to operate.
6. The negative pressure will pull in surrounding Conditioned air and ambient air from unsealed areas which may include dust, moisture or other particles.

Visit [www.KwiKool.com](http://www.KwiKool.com) for more information and a complete set up guide.

## D POWER CONNECTION

Verify that the source power, phase and breaker size is compatible with the KPAC-II serial plate information and that the electrical circuit is dedicated only for the use of the KPAC-II Unit. Contact a licensed electrician in case of doubt about the connection.

KPAC-II systems are factory equipped with 8 feet of power cable sized to meet the power requirement of the system. Extension power cable is allowed but cannot exceed 25’ and must be rated to operate the KPAC-II.

KPAC-II 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 the KPAC-II unit will void its warranty.

## SECTION III OPERATIONAL SAFEGUARDS

Read the following safeguards carefully before installing the KPAC-II:

### WARNING

Do not operate or install the KPAC-II unit in a potentially explosive, combustibile, or corrosive gas atmosphere.

### WARNING

To avoid burns and fire damage, keep the KPAC-II system away from flammable materials and open flame.

### WARNING

To avoid electrical shock, keep the KPAC-II system away from direct contact with water and any liquids. Do not touch the system with wet hands.

### WARNING

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. Remove all ducting and hoses attached to the KPAC unit. Only then should the casters be unlocked.

### CAUTION

*To ensure the KPAC-II 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 the KPAC-II model. Lock casters to prevent unit movement.*

### CAUTION

*Do not tilt or overturn the unit, since this could damage the compressor.*

- Do not place objects on top of the unit.
- Do not insert hands or any other object into the Cold air supply chutes.
- Do not operate the KPAC-II system with its service doors open.

If the KPAC-II system makes abnormal noises or vibrations, call 1-800-KWIKOOL (1-800-594-5665) for help.

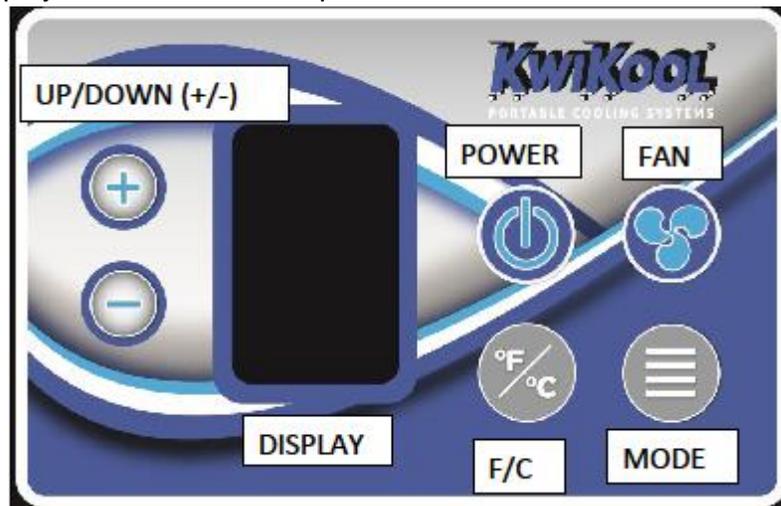
## SECTION IV UNIT OPERATION

### A APPLY ELECTRICAL POWER

Once power is engaged by plugging in the system and/or switching the breaker to the **ON** position, the KPAC-II display will show the current room temperature. The unit is set to **OFF** and the fan is set to the default position. A 2.5-minute time delay starts, indicated by a flashing F on the display. If nothing shows on the display, refer to Section IX, Troubleshooting Guide.

### B CONTROL PANEL

The control panel display shows the current operational status of the unit.



1. **POWER** Button - Pressing this button on the control panel engages or shuts down the KPAC-II system. All settings selected are stored in the microprocessor board even if the power is lost including the **ON/OFF** selection. Refer to the Section IX, Troubleshooting Guide, if the KPAC-II is alerting an alarm after selecting **ON**.
2. **MODE** Button - Depressing the **MODE** button selects the choice of operations: **COOL**, for cooling with compressor operation. **FAN**, for air circulation without 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.
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". The flashing indicates the system is in a 2.5-minute time delay 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 display reads **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 when in fan on mode.
5. **Up (+)** and **Down (-)** Selector Buttons - Raises or lowers the desired set temperature.

- a) 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.
- b) The adjusted set point flashes on and off 12 times after the last change and then returns to display the room temperature.
- c) 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 the KPAC-II can cycle on and off at to avoid operational issues such as freezing.

### CAUTION

*KPAC-II systems are designed to maintain the set point when sized properly. Constant operation without achieving the set point may shorten the expected operational life of the system.*

### NOTE

*The lowest set point temperature available for the KPAC-II 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 the KPAC-II System. Pressing the **ON/OFF** button once on the control panel will turn the unit **ON** and **ON** will be displayed on the right side of the display as well as the previously chosen mode.
2. 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 the unit has been sitting for over 2 minutes, this should happen immediately upon turning the unit on, unless the set point is lower than the current room temperature. In this case the unit is ready to automatically turn on once the temperature rises above the set point.
3. 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 2.5-minutes. This prevents the compressor from being damaged due to short cycling of the compressor.
  - 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.
  - The condenser fan will start immediately with the compressor. 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.
4. If the unit was previously set to the **FAN** mode, then **FAN** will be displayed and the Supply Air fan will start to run.

## SECTION V BUILT IN SAFEGUARDS

### A COMPRESSOR TIME DELAY

Protects the unit from potential damage by delaying the compressor from starting before the pressures in the mechanical system equalize. This always activates when the KPAC-II:

- Cycles off.
- Is turned off.
- Power is lost and then restored.
- The operational mode is changed.

Display flashes **C** or **F** if the time delay is activated. The time delay lasts for about 2.5 minutes.

### B HIGH-PRESSURE SWITCH AND ALARM

Protects the KPAC-II Series unit from potential damage to the mechanical system by shutting down, sounding an audible alarm and displaying a fault code (**AL**) when the system pressure exceeds safe operating conditions. The high pressure switch is a manual reset switch located in the condenser inlet on the back of the system and labeled **HP Reset**, and must be reset after the switch is activated and the condition causing the trip is corrected. If activated, the switch will click when pushed in and then released.

### C AUTOMATIC RESTART

In the event of a power loss, the KPAC-II resumes operation when the power is restored. All operational functions are preserved in the memory of the Microprocessor Board including the **ON/OFF** selection.

### D CONDENSATE TANK & HIGH LEVEL ALARM

All KPAC models come standard with an internal condensate tank. The tank is equipped with an overflow safety cut-off. When the tank is full, the safety will automatically shut down the KPAC-II unit, sound an audible alarm and display a fault code (**CF**). This prevents accidental flooding of the conditioned space. To continue operation when the bottle is filled, see Section II Paragraph B.

### E SERVICE PORTS

Located in the filter access compartment (as seen when facing the controls of the unit) of the KPAC-II. This gives service personal a connection point for service gauges to monitor the operating pressures of the KPAC-II's refrigeration system.

## SECTION VI APPLICATION REQUIREMENTS

### A AIR TEMPERATURE REQUIREMENTS

The environmental requirements of the KPAC-II unit at the installation site are 60 to 110 degrees F for the condenser Make-up air located on the back 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. The operator also may notice diminished performance.

- The High Pressure switch is a manual reset switch. The HP Reset switch is located in the condenser Make-up air inlet on the back of the system.
- Reset the unit by pressing the button labeled **HP Reset**.

Standard air-cooled KPAC-II models are not designed to operate at temperatures below 60 degrees F. Low-ambient temperature controls are available. The controls must be special ordered and at an additional cost. Temperatures below 60 degrees F will cause freezing and/or diminished performance and can void the warranty.

## **B CAPACITY & TEMPERATURE SETTINGS**

Sizing of the units is based on matching capacity to a specific heat load while maintaining a 72-degree F temperature. To reach temperatures below 72 degrees F, the unit must have extra capacity.

### **CAUTION**

*KwiKool recommends that the operator not set the temperature set point below 72 degrees F, unless there is excess cooling capacity beyond the heat load, since this may cause the unit's evaporator coil to freeze up.*

## **C POSITIONING OF UNIT**

Do not place the KPAC-II unit in direct sunlight. The unit should be positioned so that the output of the unit can be focused as close to the heat generating equipment as possible with the front grill fully exposed.

### **CAUTION**

*Do not block the front of the unit, since this will cause a restriction in the airflow and can cause low performance and/or evaporator coil freezing.*

### **NOTE**

*The KPAC-II will take condenser Make-up air, which cannot be ducted, from the area of placement. The inlet for the condenser Make-up air is located in the rear of the unit and will not allow for the back of the unit to be placed flat against a wall or fixed object. Not allowing at least 5 or 6 inches of space between the inlet and a wall or fixed object will cause decreased performance and/or high pressure safety trip that shuts down the KPAC-II.*

## SECTION VII MAINTENANCE

### AIR FILTERS

The KPAC-II unit comes from the factory with 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 the conditioned space.

#### CAUTION

*Failure to maintain the filters will cause restricted air flow and can lower overall unit performance.*

The air filter is located on the front of the KPAC-II unit below the control. Release the two slotted fasteners on the access door to open.

## SECTION VIII FAULT CODES

The KPAC-II System incorporates a self-diagnostic system that sounds an audible alarm, stops the system and displays a fault code (shown below) 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

**AL** = High Pressure Switch Tripped

**FP** = Freeze Protection (optional)

## SECTION IX KPAC TROUBLESHOOTING GUIDE

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
Unit displays <b>CF</b> , Audible alarm fails to clear on start up or while operating.	Internal Condensate Tank is full, or condensate float switch jack is not installed or not positioned correctly. Water level switch is engaged.	<ol style="list-style-type: none"> <li>1. Empty Internal Condensate Tank. (see Section II, Paragraph B)</li> <li>2. Unplug tank plug and reinstall to ensure good connections.</li> <li>3. System automatically resets when fault condition is corrected.</li> </ol>

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
<p>Unit Displays <b>AL</b>, Audible alarm is sounding during start up or while operating.</p>	<p>Microprocessor board has detected high pressure. The High Pressure switch is tripped.</p>	<p>High pressure is normally caused by reduced Condenser air flow.</p> <ul style="list-style-type: none"> <li>• Check for restriction in ducting.</li> <li>• Check for Condenser air system ventilation (See Section VI. Paragraph C).</li> <li>• Check condenser motors and/or blowers for proper operation.</li> </ul> <p>The High Pressure (<b>HP</b>) switch is a manual reset type. To reset, press the button labeled <b>HP Reset</b>, located in the condenser Make-up air inlet on the back side of the KPAC-II, as seen by the operator. The operator should feel a click.</p>
<p>Audible alarm fails to clear on start up or while operating, unit displays <b>FP</b>. Optional.</p>	<p>Microprocessor has detected freezing on the evaporator coil if the system has a factory installed freeze sensor. (Special order).</p>	<p>Check for freezing on the evaporator coil and turn the system off to let it thaw out. Auto resets upon correction. Call 1-800-KWIKOOL (1-800-594-5665) if the system is not equipped with a freeze sensor.</p>
<p>System is <b>ON</b> and display is showing <b>ON</b>, but unit is not supplying Conditioned air.</p>	<ul style="list-style-type: none"> <li>• System is in time out (<b>F</b> or <b>C</b> is flashing).</li> <li>• Control is set above room temperature.</li> <li>• Control is adjusted out of operating parameters.</li> <li>• System not in the correct operational <b>MODE</b>.</li> </ul>	<p>Wait 2.5 minutes for the time delay to elapse. Review System Operations guide to adjust control.</p>
<p>System is <b>ON</b> but the microprocessor board resets the time delay (flashing <b>F</b> or <b>C</b>) when the compressor attempts to start.</p>	<p>Microprocessor board detects voltage drop below operating parameters.</p>	<ul style="list-style-type: none"> <li>• Confirm the integrity of the source power.</li> <li>• Check for proper wire size and length of power extension cable.</li> <li>• Be sure the circuit is dedicated to the operation of the KPAC-II only.</li> </ul>
<p>Power is supplied but control is blank.</p>	<p>Low voltage circuit is not engaged.</p>	<p>Check source power breaker and verify incoming power to contractor. Call 1-800-KWIKOOL (1-800-594-5665) for assistance.</p>

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
System trips breaker on start up.	<ul style="list-style-type: none"> <li>• Incoming power is incorrect.</li> <li>• Breaker is undersized or faulty.</li> <li>• Power cable is too long and/or undersized.</li> </ul>	Verify the circuit and power cable is within the systems specifications, consult with the electrician or: Call 1-800-KWIKOOL (1-800-594-5665) for guidance.
Display shows <b>32</b> and unit will not turn on cooling.	No connection of temperature sensor to Microprocessor. Temperature Sensor malfunctions.	Call 1-800-KWIKOOL (1-800-594-5665) for help.
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.	<ul style="list-style-type: none"> <li>• Verify that Supply and Return air are not blocked and duct work is installed to specification.</li> <li>• Remove or add duct as needed.</li> <li>• Check air filter for blockage.</li> </ul>
Evaporator coil is freezing.	<ul style="list-style-type: none"> <li>• Low or restricted air flow.</li> <li>• Undersized capacity.</li> <li>• Unit constantly on.</li> <li>• Unable to achieve set point.</li> <li>• Low Return air temperature out of factory specifications.</li> <li>• Mechanical system malfunction.</li> </ul>	<ul style="list-style-type: none"> <li>• Direct supply Return air to area of highest heat load.</li> <li>• Check for blocked air flow from the Supply air.</li> <li>• Replace air filters.</li> <li>• Adjust set point to allow the unit to cycle.</li> <li>• Add another KPAC-II system or larger capacity model.</li> <li>• Install service gauges to view pressures.</li> </ul> Call 1-800-KWIKOOL (1-800-594-5665) for assistance.
Chatter or hum is heard from the control box while the system is operating.	Incoming source power is of poor quality or low voltage component is faulty.	Check for proper incoming voltage. Remove excess or undersized power cable. Call 1-800-KWIKOOL (1-800-594-5665) if there are any problems.
Numeral <b>99</b> flashes on display.	Ambient room temperature is over 99 degrees F.	Unit is working properly. Lowering of room temperature will rectify the flashing.
<b>59</b> or lower temperature Flashes on display.	Ambient room temperature is less than 60 degrees F.	Limits of unit have been reached. Operating temperatures are 65 - 105 degrees F.