KPO
INDOOR & OUTDOOR

KWIKOOL SERIES KPOX-XX
PORTABLE AIR CONDITIONER

OPERATION MANUAL

KwiKool

Table of Contents

SECTION 1 - UNIT COMPONENTS

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

In contrast to conventional air conditioners, which circulate air conditioning capacity evenly to a space. KwiKool systems are used for cooling an area with a high concentration of heat load, such as from electrical or computer equipment. Understanding the capabilities of the KwiKool can help the operator avoid problems.

KPO can 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. 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. The KwiKool system is equipped with the necessary controls to maintain those environments.

There are three sizes of KPO systems. These are KPO5 (5-ton), KPO12 (12-ton) and KPO25 (25-ton). Before installing and using the KPO systems, read this manual carefully for instructions on proper usage and all safeguards. This manual should be kept for future reference.

A. KPO5

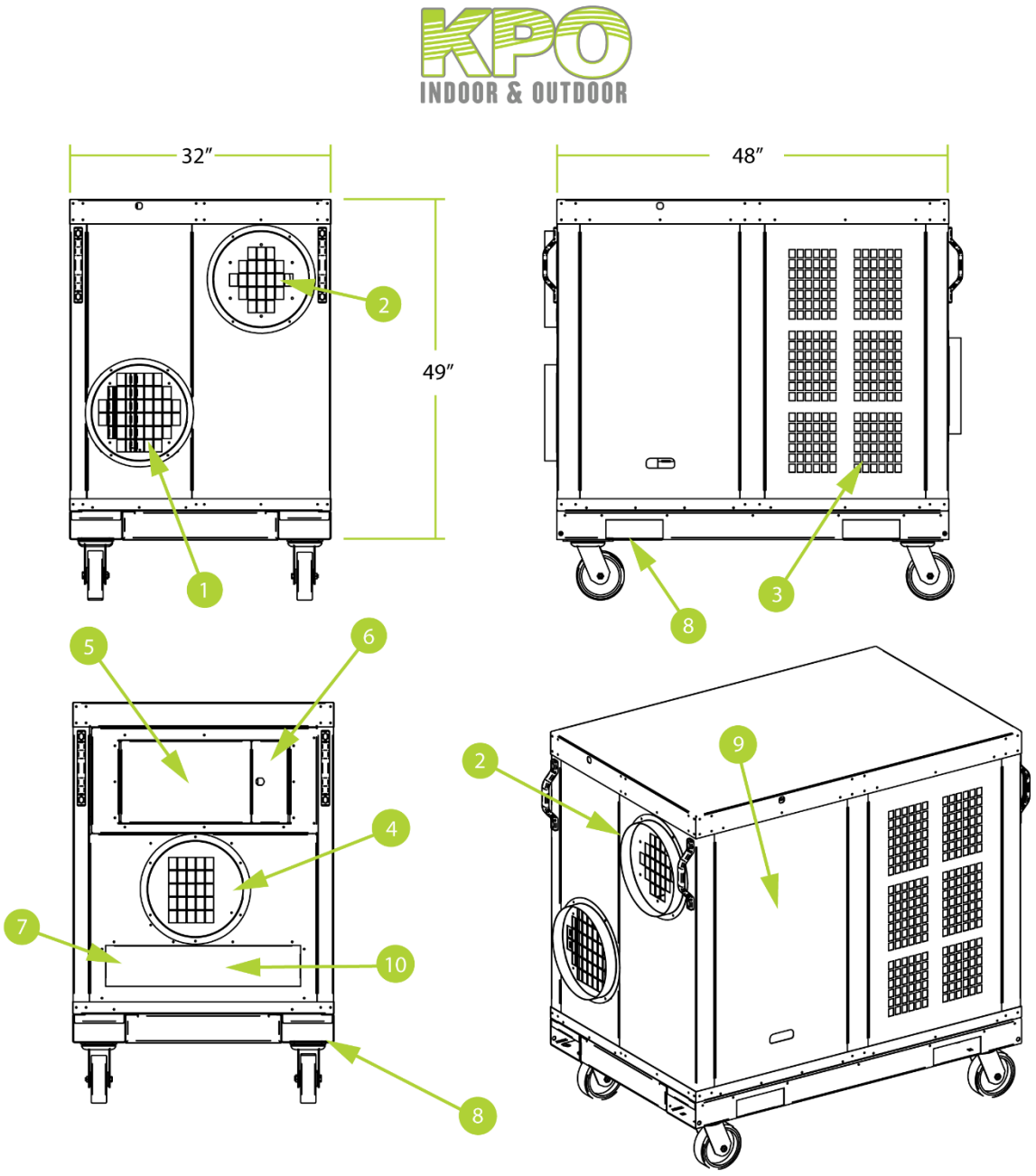
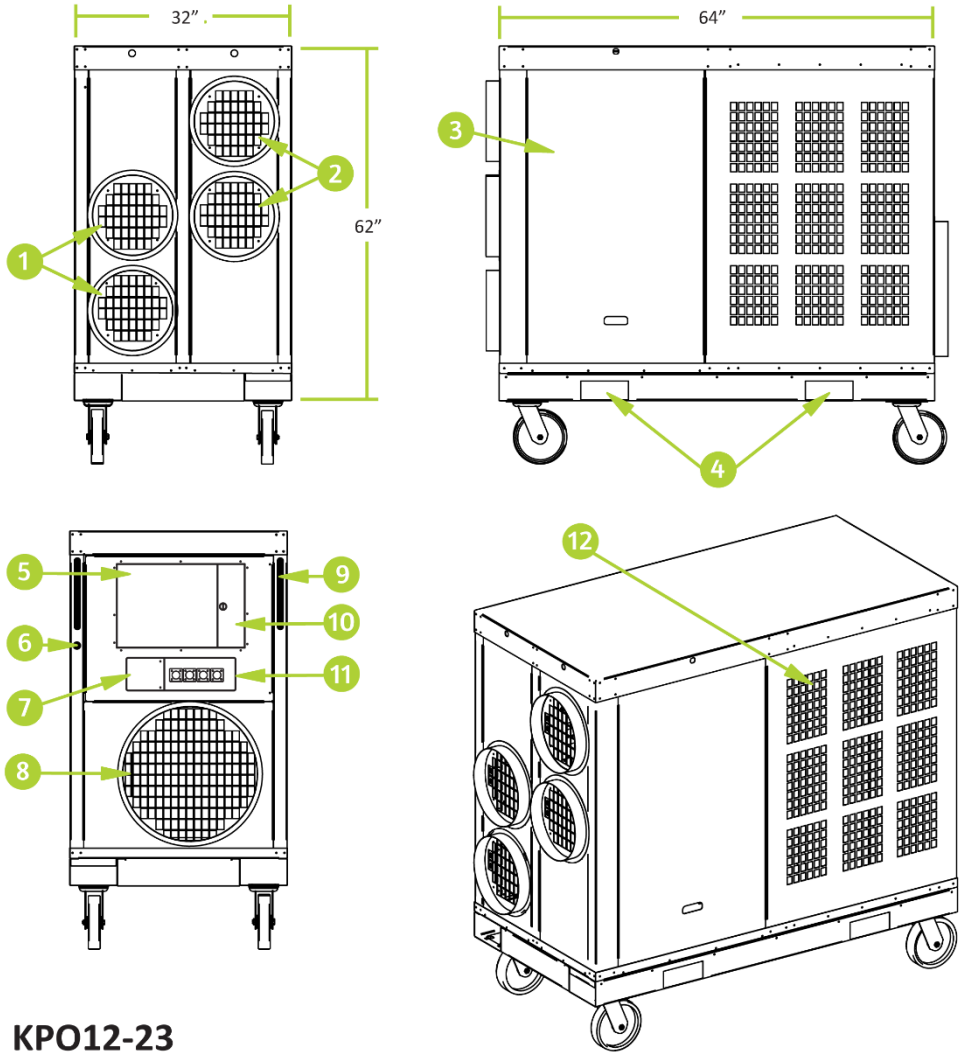


Figure 1, KP5O

SPECIFICATIONS



KPO12-23

1. Cold Air Return
2. Cold Air Supply
3. Access Door
4. Forklift Pockets
5. Electrical Panel
6. Condensate Nipple
7. Breaker Access
8. Condensor Air Outlet
9. Handle
10. Control Panel Access
11. Camlock Connections
12. Condenser Air Inlet

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B. KPO12

Figure 2, KPO12

C. KPO25

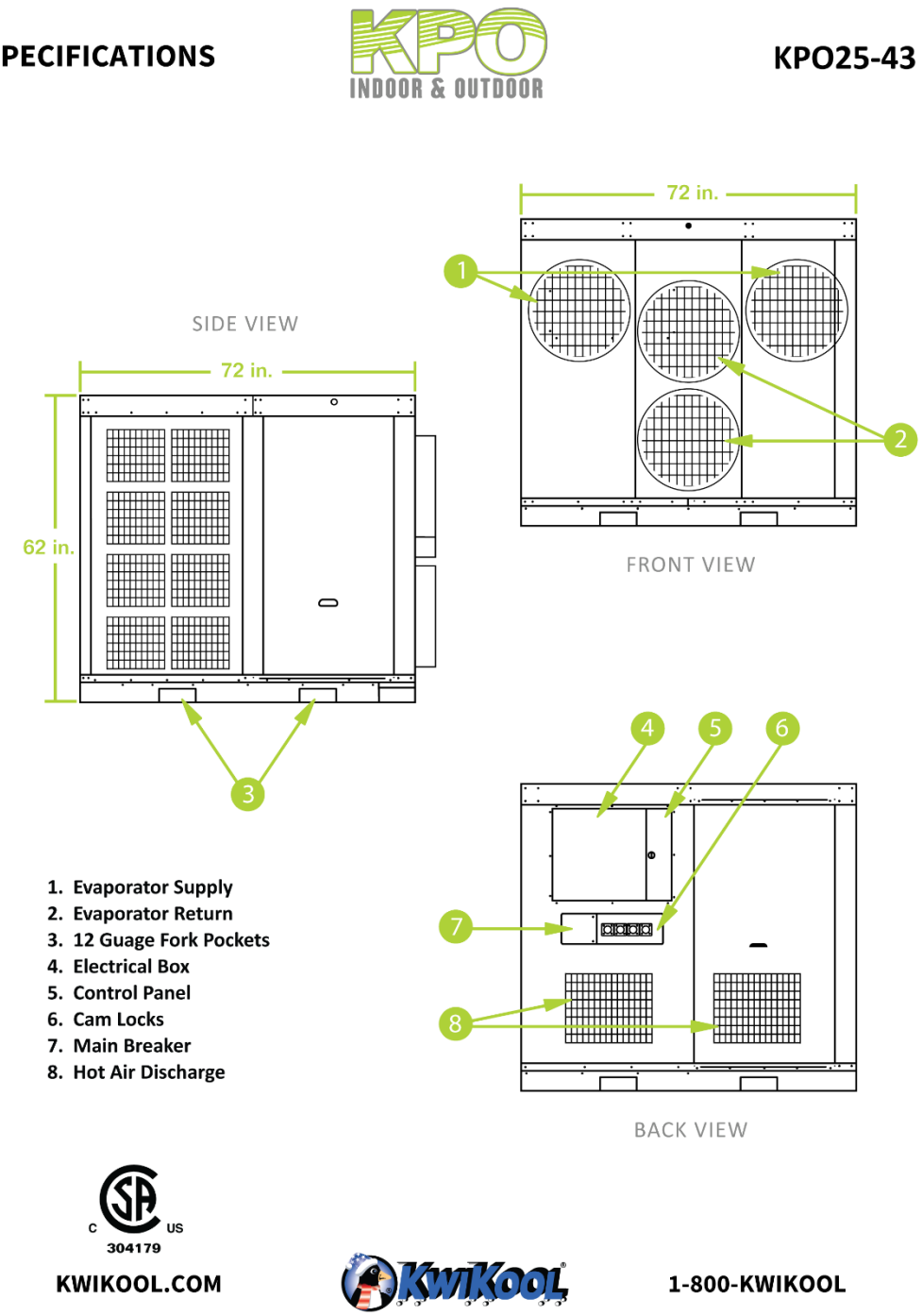


Figure 3, KPO25

SECTION II - INSTALLATION AND ASSEMBLY

A. PREVIEW THE INSTALLATION SITE

WARNING

In COOL Mode, DO NOT place the KPOXX in the space that is being cooled unless utilizing the optional condenser return air panels. The KPO is generally designed to be outside the conditioned space and ducted in.

AVERTISSEMENT

En mode REFROIDISSEMENT, NE placez PAS le KPOXX dans l'espace à refroidir, à moins d'utiliser les panneaux de retour d'air du condenseur en option. Le KPO est généralement conçu pour être situé à l'extérieur de l'espace conditionné et canalisé.

Before moving the KPOXX into place, verify the following:

- The direction to which the supply air is going.
- The direction from which the return air is coming (For conditioned supply).
- The direction to which the hot air exhaust is going (heat removal in A/C mode only).
- The direction from which the condenser make-up air is coming. (In A/C mode only).
- The location of the power supply.
- The direction and location to which the condensate water will be pumped (A/C mode only).

Position the unit based on these guidelines for best results.

NOTE

Leave at least five feet of open space around the make-up air inlets for the condenser to ensure proper operation.

B. ASSEMBLY

1. Install casters-(KPO5 & KPO12 only).
2. Lift the unit carefully with a forklift using the built-in fork pockets. Do not tilt the unit to bolt the casters to the base.
3. Install and tighten the bolts and nuts, four for each caster.
4. Install flanges.
   a) Install flanges with fasteners that are included with the collars

b) Start two fasteners in the top two female inserts that are around each inlet or outlet on the KPO
c) Han0g the collar on the two fasteners that are started in the insert
d) Push the collar flush with the cabinet
e) Install the remaining fasteners and tighten well. Loose flanges will leak air and diminish performance

C. POWER CONNECTION

Verify the source power, phase and breaker size is compatible with the unit's serial plate information. If in doubt, contact a licensed electrician.

The KPO5-ton comes from the factory with eight feet of power cable sized to fit the electrical specification of the unit's electrical requirement and has no male receptacle attached. Optional male cam locks can be ordered from the factory in lieu of cable.

The KPO12-ton & 25-ton comes without power cable and has four male 16 series camlock connectors ready to receive the corresponding female 16 series cam locks.

Female cam locks, or complete power cord line sets, can be bought separately with the proper cable size attached from the factory in various lengths.

D. INSTALL CONDENSATE LINE

The KPO series come equipped with a high lift condensate pump.

- It is important to connect the condensate line prior to connecting the electrical power, as the condensate pump is live when the power is engaged. Collected water in the pump's reservoir could be ejected when powered up.
- KPO-5 and 12-ton models, the connection is a ¼-inch outer diameter barbed fitting located on the left side as the operator faces the control just below the handle.
- On 25-ton models, the connection is a ¼-inch outer-diameter barbed fitting located on the left side of the unit while facing the control recessed in the center column.

E. INSTALL CONDITIONED AIR SUPPLY AND RETURN FLEX DUCT.

1. The supply air works best directed to heat load equipment inlets or directly on the area to be cooled.
2. The KPO series requires ducts to direct the cooling or heating into the conditioned space. This is done with 12-inch duct on KPO5 & KPO12 and 20-inch duct on KPO25.
3. As the operator faces the unit, opposite the control end, the 12-inch cold air supply is on the right side on KPO5 and KPO12 models and the 12 inch return on the left side (see figure 1,2). On KPO25 systems, the 20-inch cold air supplies are located on the left and right side of the unit opposite the control end, and the returns are in the middle. (See figure 3).
4. Clamp supply ducting onto the flange(s) and route the duct to the desired location.
5. Install Conditioned Air Return Flex Duct.

6. The KPO portable works best when the supply air duct is beyond the area of highest load and the return can drag the cooled air across the heat load areas.
7. Clamp return ducting onto the flange(s) and route the duct to the desired location. Customers using this unit only to blow conditioned air and that are not trying to condition a space may not need to connect a return air duct. However, the KPO series requires a minimum amount of duct to operate (see specifications). **If operating this unit with no supply or return ducting, reduce the return air by at least 50%.**

CAUTION

The Conditioned Air Return flex duct is pulling in air and can collapse while operating. Avoid this condition by pulling all the slack out of the duct and anchoring it to a fixed object. Duct collapse is the number one cause of evaporator coil freeze or low performance.

PRUDENCE

Le conduit flexible de retour d'air conditionné aspire de l'air et peut s'effondrer pendant le fonctionnement. Évitez cette condition en éliminant tout le jeu du conduit et en l'ancrant à un objet fixe. L'effondrement des conduits est la principale cause de gel du serpentin de l'évaporateur ou de faibles performances.

NOTE

KPO models utilize high static blowers. The KPO systems must have a minimum of 25 feet of ducting for each inlet and outlet. KPO12 and KPO25 must have 100 total feet of duct (min 2 ducts). KPO5 must have 50 feet of total ducting (min one duct). For example, if using a KPO12, 100 feet of duct is needed. Use four 25-foot lengths of ducting or two 50-foot lengths of ducting on any outlet. If unsure about the current application, call KWIKOOL at ***1-800-KWIKOOL****.*

CAUTION

Allowing the KPO to operate without evaporator side duct or without reducing the return air could cause condensate water leakage, diminished temperature difference and/ or evaporator motor failure.

PRUDENCE

Permettre au KPO de fonctionner sans conduit côté évaporateur ou sans réduire le retour d'air pourrait entraîner une fuite d'eau de condensation, une diminution de la différence de température et/ou une panne du moteur de l'évaporateur.

8. Install Condenser Flex Duct, hot air discharge in **COOL** mode.

- Direct the hot air discharge away from the conditioned space and away from the condenser air intakes. This is especially true when the KPO is used in a confined space or indoor closed space. This is done with a 12-inch duct on KPO5 and a 20-inch duct on KPO12 and KPO25.
- For the 12- and 25-ton KPO (the 25-ton KPO has 2 20 inch ducts) and one 12-inch duct for the 5-ton KPO, clamp the duct onto the flange(s) on the control side of the KPO and route to the desired location. See specifications for maximum duct length.

NOTE

*It is not necessary to connect hot air discharge duct if using the KPO in **HEAT** mode or outdoors and ducting cooling into a space.*

- When used indoors or in a confined space in **COOL** mode, and the hot air exhaust is ducted out, the KPO must have a supply of makeup air for the condenser. The condenser make-up air cannot be ducted into the KPO on standard models without the optional condenser return air panels, and must come from the surrounding space.

CAUTION

Make sure there is adequate fresh air supply, or the unit will shut down on High Pressure alarm (HP) to protect the compressor from catastrophic failure.

PRUDENCE

Assurez-vous qu'il y a une alimentation en air frais adéquate, sinon l'unité s'arrêtera en cas d'alarme haute pression (HP) pour protéger le compresseur d'une panne catastrophique.

SECTION III - OPERATIONAL SAFEGUARDS

Read the following warnings and safeguards carefully before installing or moving the KwiKool.

WARNING

Do not operate or install the KwiKool unit in a potentially explosive, combustible, or corrosive gas atmosphere.

AVERTISSEMENT

N'utilisez pas et n'installez pas l'unité KwiKool dans une atmosphère de gaz potentiellement explosive, combustible ou corrosive.

WARNING

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

AVERTISSEMENT

Pour éviter les chocs électriques, gardez le système KwiKool à l'écart de tout contact direct avec l'eau et tout liquide. Ne touchez pas le système avec les mains mouillées.

WARNING

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

AVERTISSEMENT

Pour éviter les brûlures et les dommages causés par le feu, gardez le système KwiKool à l'écart des matériaux inflammables et des flammes nues.

WARNING

Do not move the system while it is operating. Before moving the system, first turn to OFF then unplug the system from the power source. Remove all pipes and hoses attached to the KwiKool unit. Only then should the casters be unlocked.

AVERTISSEMENT

Ne déplacez pas le système pendant son fonctionnement. Avant de déplacer le système, éteignez-le d'abord, puis débranchez-le de la source d'alimentation. Retirez tous les tuyaux et flexibles fixés à l'unité KwiKool. Ce n'est qu'alors que les roulettes doivent être déverrouillées.

CAUTION

To ensure the 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 the KwiKool model. Lock casters to prevent unit movement.

PRUDENCE

Pour garantir la stabilité du système KwiKool, le sol sur lequel le système doit être placé doit être de niveau, exempt de vibrations et suffisamment solide pour supporter le poids du modèle KwiKool. Verrouillez les roulettes pour empêcher le mouvement de l'unité.

CAUTION

Do not tilt or overturn the unit, since this could damage the compressor or cause condensate to leak.

PRUDENCE

Ne pas incliner ou renverser l'appareil, car cela pourrait endommager le compresseur ou provoquer une fuite de condensat.

CAUTION

Do not place objects on top of the KPO Series System, since these objects could fall off and hurt personnel or damage the equipment.

PRUDENCE

Ne placez pas d'objets sur le système de la série KPO, car ces objets pourraient tomber et blesser des personnes ou endommager l'équipement.

CAUTION

Do not insert your hand or any object into the cold air supply chutes. This blocks the supply chutes and may affect operation of the KPO Series System.

PRUDENCE

N'insérez pas votre main ni aucun objet dans les goulottes d'alimentation en air froid. Cela bloque les goulottes d'alimentation et peut affecter le fonctionnement du système de la série KPO.

CAUTION

Do not operate the KPO Series System with its service doors open, since this could affect the circulation of air in the system.

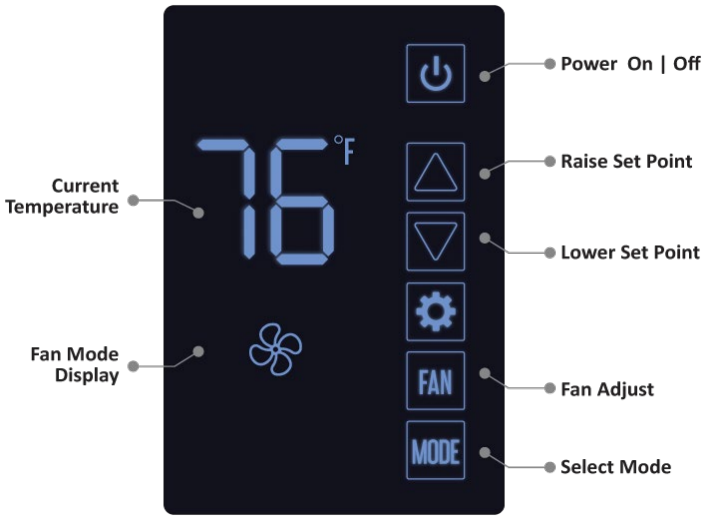
PRUDENCE

N'utilisez pas le système de la série KPO avec ses portes de service ouvertes, car cela pourrait affecter la circulation de l'air dans le système.

If the KPO system makes abnormal noises or vibrations, call KwiKool at 1-800-594-5665 (1-800-KWIKOOL).

SECTION IV - UNIT OPERATION

A. STARTUP



1. Apply electrical power. When power is supplied to the unit, the controller will become operational. All KPO systems are equipped with an integral power/ phase monitor.
2. KPO12 and KPO25 users will have to place the unit's built-in breaker to the ON position to engage the controller.
3. Turn the system to **ON**. If less than 30 seconds have elapsed from the time power is engaged, an audible alarm will sound. The control will display **AL** (for Alarm) and **PH** (for Phase)**.** This is a normal condition. If the **PH** appears, this is a power monitor fault. Incorrect phase is the most common fault in 3-phase systems.
   a) If the **AL** and **PH** display fail to clear in 30 seconds on a 3-phase system, qualified personal may turn the source power off and swap any of the 3-line voltage wires with each other.

CAUTION

The green wire is the ground wire. Nothing except a ground conductor should be inserted in this connection. DO NOT insert/ swap any phase wiring cam lock into the green camlock connector or damage may result.

PRUDENCE

Le fil vert est le fil de terre. Rien d'autre qu'un conducteur de terre ne doit être inséré dans cette connexion. NE PAS insérer/échanger un verrou à came de câblage de phase dans le connecteur

camlock vert, sinon des dommages pourraient en résulter.

b) Power the unit back up, wait for 30 seconds and then proceed to the next step. If the fault fails to clear after changing the phase, turn the power off at the source, return the wires back to the original configuration and refer to **Section XI, Troubleshooting.**

4. Set the controller - The controller of the KPO is factory set to **OFF**. In the **COOL** mode, with manual fan engaged and set to start cooling if temperature is above 72 F. The display shows the current room temperature and is set to come on within a 2-degree temperature difference.

NOTE

*The control memory holds the last parameters entered, including **ON** and **OFF**, if power is turned off or lost and then restored.*

B. LCD BUTTONS FUNCTIONALITY TABLE

BUTTON	OPERATION INSTRUCTIONS	FUNCTION
On/Off	Short Press	Start or Stop Operation
On/Off	Short Press After long press in settings	EXIT, in Tech and User Settings List
Up or Down Arrows	Short Press	Change Set Point Temperature
Up or Down Arrows	Short Press After long press in settings	Change Parameter Value, in Tech and User Settings List
Up or Down Arrows	Constant Press	Rapid Value Change of Parameter or Set Point
Mode	Short Press	Scrolls Thru Available Operational Modes
Mode	Short Press After long press in settings	Goes to Next Parameter, in Tech and User Settings List
Settings	Short Press	Change to F or C for Temperature Display
Settings	Long Press (5 seconds)	Enter User Settings
FAN	Short Press	**AUTO FAN** ON or OFF-The control displays AF when in **AUTO FAN**
FAN	Short Press After long press in settings	Go to Previous Parameter, in Tech and User Settings List

1. Press the **ON/OFF** icon. A short press on this button turns the system on or off and the system operates in the last parameter that was entered in operating Mode.
2. A short press on the **UP** or **DOWN** arrows raises or lowers the set point in the current operational mode.
3. A short press on the **MODE** icon changes the operating mode to **COOL**, **HEAT**, **FAN, AUTO SWITCH HEAT/COOL** (Optional) which is signified by both **HEAT** and **COOL** icons being displayed simultaneously.

NOTE

*In each mode except **FAN**, the currently operating mode is blinking on and off while operating in that mode.*

- *If the icon is not flashing, then the system is not calling for that operation because the set point is met*
- *The system may be in time out, signified by the **F** or **C** next to the room temperature display blinking on and off.*

4. A short press on the FAN icon changes the system to **AUTO FAN** or **MANUAL FAN** in the **COOL** mode.
   - When set in **AUTO FAN (AF)**, the supply air in **COOL** mode will only operate when the compressor is on. The letters **AF** show on the display when using this feature.
   - When set in **MANUAL FAN**, the supply air fan in the **COOL** mode is always on. **AF** will not display **in MANUAL FAN**. This feature is only available in **COOL** mode.
   - The supply air is always on in **HEAT** or **FAN** mode and the supply air may operate in the **OFF** mode if set in **HEAT** and turned off before the cycle was completed.

C. OPERATING MODES

FAN MODE 

1. Set mode to **FAN**.
2. The fan icon displays solid and the supply air fan starts with no cooling or heating operation.
3. A short press on the power button stops the fan operation.

COOL MODE

1. Set the mode to **COOL** - a 2.5-minute time delay starts for the compressor to prevent short cycling. **This is signified by F or C blinking on and off on the display.**
2. Adjust the set point below the room temperature displayed on the control to the desired temperature
3. Select **FAN**. This requires a short press on the icon to display **AF** (AUTO FAN**)** for supply fan operation when the compressor starts.
4. If already in **ON** mode, a short press on the **FAN** icon begins continuous supply fan operation (**AF** will not display when using this feature).
5. Press **ON**. If the time delay is finished, the icon for **COOL** starts to blink, the compressor starts, and cooling will begin. After the system has built up enough pressure, the hot air exhaust fan will start to ramp up. It is normal for this fan to delay in starting and normal for it to slow down and speed up during the operating process.

NOTE

*The hot air exhaust fan (condenser discharge) is not operational in **HEAT** or **FAN** mode. It only operates in **COOL** mode.*

HEAT MODE (Optional)

1. Set the mode to **HEAT**.
2. Adjust the set point above the room temperature displayed on the control to the desired temperature.
3. Press **ON** and heating will begin.

NOTE

*Fire rated or high temperature duct is NOT required to use with the KPO series in **HEAT** mode. The heat capacity rating for KPO systems is as follows: KPO25 is 60 or 48 KW, KPO12 is 30 or 24 KW, and KPO5 is 15 or 12 KW.*

NOTE

*Operators do not have control of the supply fan in this mode. The supply air fan is always on when **ON** is selected.*

NOTE

The heat function on KwiKool KPO systems will not require a time delay or compressor operation; therefore, there is no delay in starting and no need to manage condensate water or condenser air discharge.

OPERATING MODE, AUTO COOL/ HEAT (optional)

Activate in Technician Parameters List P-14, see page 22

1. Set the mode to **HEAT/COOL**. Both icons are displayed in this mode.
2. Enter the set point using the **UP** or **Down** arrows.
3. The system will automatically shift between **COOL** or **HEAT**, based on demand within a 4-degree temperature difference when turned **ON**. See the example below for more information.

EXAMPLE

The set point is 72 F. The system is set in the **HEAT/COOL** Mode. The room reaches the set point in **COOL** mode and the compressor cycles off.

If the temperature in the room continues to drop and gets down to 70 F, then the **HEAT** mode will start and heat will come on until the set point of 72 is reached. The heat then cycles off.

If the temperature continues to rise and gets to 74 F, the system switches to **COOL** mode and cools the space to the set point and then cycles off.

The **COOL** or **HEAT** icon flashes on and off to signify which operation is currently on and the system operates the selected Fan feature for each function.

CYCLING OF POWER ON/OFF BUTTON:

1. After the system has reached its set point in **COOL** or **HEAT** mode it will automatically cycle off or the user may choose to turn the system off by selecting **OFF**.
2. If the unit cycles off or is turned off, the time delay will always activate when the system again calls for cooling.
3. When cycling off by making the set point, the supply air fan stays on in **HEAT** mode. In **COOL** mode, the fan stays on only if **MANUAL FAN** is selected.
4. Heating or cooling will begin automatically when the temperature rises above or below the set point, depending on the chosen mode.
5. Turning the system off manually will turn the evaporator fan off and not allow the system to restart until the control is set to **ON** and the return air temperature is near the set point.
6. In **FAN** mode the supply air fan only shuts down when **OFF** is selected.

7. In **HEAT** mode, the supply air fan can still operate when turned **OFF** to cool the heat strips. if the system was turned off before the heat cycle was complete, the fan will shut down when the strips are cool.

TECHNICAL SETTINGS

Access into these operations is described later in this manual. Technicians menus and User menus each have different features that allow access into settings and certain functions of the control based on information supplied by the engineers.

SECTION V - BUILT IN SAFEGUARDS

A. COMPRESSOR TIME DELAY

Protects the KwiKool while in **COOL** mode from potential damage by delaying the compressor from starting before the pressures in the mechanical system equalize. The Time Delay always activates when the KwiKool cycles off or is turned off, or if power is lost and then restored.

B. HIGH-PRESSURE SWITCH AND ALARM

The High Pressure Switch protects the KwiKool from potential damage to the mechanical system by shutting down and alerting operators of a condition such as stopped or slowed airflow over the condenser coil, make-up air temperature above operating range, or mechanical failure. If these conditions exist, the KwiKool will sound an audible alarm only, and display **HP** on the control.

To resume operation, the system requires a manual reset after corrective action is taken.

- The reset switch is located on the left side of the unit as the operator faces the control in the service door access on the compressor discharge line for KPO5 and KPO12. Push in to reset. If activated, the operator will hear a click.
- KPO25 systems have two reset switches located in the return air compartment of the system, mounted one on each side of the compartment. If activated, the operator will hear a click.
- Be sure to reset both switches if getting the **HP** alarm. If this alarm is engaged the system will not operate in **COOL**, **FAN**, or **HEAT** mode.

C. LOW PRESSURE SWITCH AND ALARM

The Low Pressure Switch protects the KwiKool from potential damage to the mechanical system by shutting down and alerting operators of the condition. This safety mode activates when pressures below 20 PSI are detected in the mechanical system of the KwiKool. The KwiKool will sound an audible alarm only and display **LP** on the control.

There is an automatic reset upon correction of the low-pressure condition. If this alarm is engaged the system will not operate in **COOL, FAN** or **HEAT** mode.

Call **1-800-KWIKOOL**, if this alarm is present on initial startup.

D. SERVICE PORTS

The Service Ports are located in the service access door, on the left side when facing the control panel on KPO5 and KPO12. KPO25 service ports are in the return air compartment. This gives service personnel a connection point for service gauges to monitor the operating pressures of the KwiKool.

E. SIGHT GLASS

Located in the condenser access compartment on the control side of the KPO, the sight glass 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.

F. AUTOMATIC RESTART

In the event of a power loss, the KwiKool resumes operation when the power is restored if in the **ON** position. All operational functions are saved in the memory of the control.

G. CONDENSATE PUMP & HIGH-LEVEL ALARM

KPO systems are factory-equipped with an internal high lift condensate pump. KwiKool condensate pumps can pump the condensation collected in the reservoir of the pump to a drain or other area approved for the discharge water by attaching ¼ inch I.D. tubing to the ¼ inch O.D. barbed condensate outlet. KwiKool condensate pumps have a pump safety cut-off that prevents accidental water overflow by shutting the KwiKool down and alerting operators with an audible alarm and displaying **CP** on the control panel.
Call **1-800-KWIKOOL** if this alarm is present on initial startup.
The most common reasons for this alarm to activate during operation are:

- the unit is on a non-level surface or restricted water flow thru the discharge tubing due to crimping or clogging.
- there could be too much length in the discharge line connected to the system

There is an automatic reset upon correction of the condensate flow. If this alarm is engaged, the system will not operate in **COOL, FAN** or **HEAT** mode.

H. POWER/PHASE MONITOR

The power monitor samples the power supply and shuts down the KPO and alerts operators with an alarm, **PH** displays on the control, and a red fault light displays on the monitor in the event of low or high voltage, incorrect voltage, incorrect phasing, or motor fault.

1. The monitor is factory set to reset automatically upon adjustment of the monitor or correction of the issue indicated on the monitor. The monitor is in the electrical control panel of the KwiKool and displays the reason for activation.
2. Clear the blinking fault history light by pressing and holding the fault button for 3 seconds.
3. Refer to **Section XII, Troubleshooting For Systems with Phase Monitors** for adjustment details if the KwiKool phase monitor is alarming and displaying faults. If this alarm is engaged the system will not operate in **FAN**, **COOL** or **HEAT** mode.

I. VFD-VARIABLE FREQUENCY DRIVE

A VFD is used on KPO systems in **COOL** Mode to optimize the operation of the condenser fan by slowing down and speeding up the rotations of the blower. This helps to maintain the best pressure needed to operate in the current environment.

The VFD displays the current operating frequency, or any error message needed for fault diagnosis. The VFD is in the supply return air compartment on KPO5 and KPO12. On KPO25 systems it is in the condenser motor compartment.

The condenser motor VFD will not operate the condenser fan in **HEAT** or **FAN** mode, as it is not needed for these modes.

SECTION VI - APPLICATION REQUIREMENTS

A. AIR TEMPERATURE REQUIREMENTS COOL MODE

The environmental requirements of the KwiKool unit at the installation site are 0 to 110 F for the condenser make up air located on each side of the unit. Standard KwiKool KPO models are not designed to operate at temperatures below 60 F. on the evaporator. Temperatures below 60 F. will cause evaporator coil freezing.

- If the unit operates in an environment above 110 F, the high-pressure switch may trip, stopping the unit's compressor or the operator may notice diminished performance.
- The High-Pressure Switch is a manual reset type and located in the front service compartment on KPO5 and KPO12. The reset is in the return air compartment on the KPO25, and the system is equipped with two reset switches.
- Reset is accomplished by pressing the button on the switch located on the compressor discharge line. If the switch has tripped, the operator will feel a distinct click upon reset.

B. CAPACITY & TEMPERATURE SETTINGS

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

CAUTION

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

PRUDENCE

Nous recommandons à l'opérateur de ne pas régler le point de consigne de température en dessous de 72 F, à moins qu'il n'y ait une capacité de refroidissement excessive au-delà de la charge thermique, car cela pourrait provoquer le gel du serpentin de l'évaporateur de l'unité.

C. POSITIONING OF UNIT

The unit should be positioned as close to the space to be conditioned as possible with the return air duct directly downstream of the highest load. Place the KwiKool system on a level surface with casters locked to prevent unintended movement of the system and to ensure proper condensate water flow. Ensure the surface can support the weight of the KwiKool unit.

CAUTION

*Do not block the return air duct of the unit since this will cause low performance and/or evaporator coil freezing while in **COOL** mode.*

PRUDENCE

Ne bloquez pas le conduit de retour d'air de l'unité car cela entraînerait une faible performance et/ou le gel du serpentin de l'évaporateur en mode COOL.

NOTE

*For the unit to work properly, supply and return air must be in the space being conditioned. The system works by heating or cooling the air that is recirculating to the system and will raise or lower the overall temperature of the space to the set point, if properly sized. Lowering or raising the set point will not change the temperature of the supply air while operating in **COOL** or **HEAT** mode.*

SECTION VII - MAINTENANCE

A. AIR FILTERS

The KwiKool 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 airflow and can lower overall unit performance.

PRUDENCE

Le fait de ne pas entretenir les filtres entraînera une circulation d'air restreinte et peut réduire les performances globales de l'unité.

The air filter(s) are in the supply air return.

1. Remove the return air panel by turning the slotted lock fastener to the horizontal position and lift to remove the panel.
2. Remove and replace the filters. A pin holds the filters in the frame and will need to be removed.
3. Return the air panel to its designated location and turn the slotted lock fastener to the vertical (locked) position.

B. CONDENSER DRIVE BELTS

For KPO12 and KPO25 systems only, the KwiKool moves air over the condenser coil to remove heat from the conditioned space by way of a motor that drives a blower wheel. This wheel turns by way of a pulley and belt system.

1. Inspect/adjust these belts every 60 days of operation, replace as needed.
2. Located in the condenser access compartment on the control end of the KPO12, release the two slotted fasteners to give the operator access to the condenser belts and motor. On KPO25 systems to access the belts and pulley, the right-side exhaust panel as you face the control is removed by removing the 5/16 fasteners that are across the top and bottom of the panel, lift up after removing the screws.
3. Adjust the tension on the belts by adjusting the motor base.

CAUTION

Failure to maintain the drive belts will cause low performance, high-pressure trip or, in extreme cases, damage to the blower/motor in the event of a belt breaking. ***DO NOT ADJUST THE DRIVE PULLEY. ADJUST THE MOTOR BASE FOR BELT TENSIONING. DO NOT OVERTIGHTEN BELT.***

PRUDENCE

Le non-entretien des courroies d'entraînement entraînera un déclenchement à haute pression ou, dans des cas extrêmes, des dommages au ventilateur/moteur en cas de rupture de la courroie. ***NE AJUSTEZ PAS LA POULIE D'ENTRAÎNEMENT. AJUSTEZ LA BASE DU MOTEUR POUR LA TENSION DE LA COURROIE. NE PAS TROP SERRER LA CEINTURE.***

SECTION VIII – TECHNICIAN PARAMETER SETTINGS

Entrance into this function is gained by a long press onto the **MODE** button until it beeps and flashes a lock icon, followed by a long press on the **FAN** button until it beeps, then release the **FAN** button and once again a long press on the **FAN** button. It will beep and then display P4. P is for Parameter.

Select **ON/OFF** to exit, or after 1 minute the display will default back to the operating screen. These parameters are designed to limit user actions or to aid in troubleshooting.

Use the **FAN** and **MODE** buttons to scroll through the different settings.

A. Technician Parameters List

P04 is the Lock Fan Button. It allows the technician to disable operation of the **FAN** button to prevent operation by unauthorized personnel. 0=Unlock, 1=Lock

P05 is the Lock Mode Button. It allows the technician to disable operation of the **MODE** button to prevent operation by unauthorized personnel. 0=Unlock. 1=Lock

P06 is the Lock On/Off Button. It allows the technician to disable operation of the **Power** On/ Off button to prevent operation by unauthorized personnel. 0=Unlock, 1=Lock

P07 is the Lock Plus/Minus arrows. It allows the technician to disable changing of the set point of the system by unauthorized personnel. 0=Unlock, 1=Unlock

P11 sets the amount of time in seconds the T2 (Optional deicer, or sometimes called a freeze stat) stays in timeout. 0 to 240 seconds

P12 activates the T3 (Conditioned Air Supply Air Temperature) display on the control. 0=No T3 display, 1= T3 display. The supply air temperature will appear above the room temperature and t3 will display in the lower left section of the control.

P13 sets the amount of time when the T3 value will appear in seconds. 0= constant display,1 to 240= T3 appears when chosen time is elapsed.

P14 Enables or disables Auto Changeover (**AUTO COOL/HEAT**) Mode. 0=Disable, 1=Enable. Refer to **Section IV, Unit Operation.**

B. Technician Parameters Table

PARAMETER	SELECTION OPTIONS	SELECTION POSITIONS
P04- Lock Fan Button	Select 0 or 1	0- Unlock, 1-Lock.
P05- Lock Mode Button	Select 0 or 1	0- Unlock, 1- Lock
P06- Lock On/Off Button	Select 0 or 1	0-Unlock, 1- Lock
P07- Lock Plus/Minus	Select 0 or 1	0-Unlock, 1- Lock
P11-T2 Time out in seconds (optional deicer)	Select 0-240 seconds	Value appears on main display
P12-Activates Conditioned Air Supply air temp. Display (T3)	Select 0 or 1	0-Off, 1-On
P13-T3 Display in seconds (Conditioned Air Supply air temperature display)	Select 0= constant display- 1 to 240=displays in elapsed Seconds intervals	Value appears on main display above the room temperature display-T3 displays in the lower left corner
P14- Auto changeover enable (**HEAT/COOL**)	Select 0 or 1	0- Disable 1-Enable

SECTION IX - USER PARAMETER SETTINGS

A three-second press on the Settings button gains entrance into this function. P30 displays after the 3 second press.
Use the **FAN** and **MODE** buttons to scroll through the following settings.
Select **ON/OFF** to exit or after 1 minute the display will default back to the operating screen.

A. USER PARAMETER LIST

P30 turns the sound that indicates a button is pressed on the display screen off or on. Use the UP or DOWN arrow buttons to choose 0= no sound. 1= sound

P40 displays the remaining time until filter maintenance is required in 1-day intervals. This is Read Only. Not adjustable by technician.

P41 Allows reset of the filter counter and alarm by choosing 1 (UP Arrow). Select 0 for normal operations without resetting. Always defaults back to 0 after reset.

P42 sets the Filter Alarm Delay Time in days. Use the UP and DOWN arrows to set how long (in days) until the alarm displays after the filter counter time (shown in P40) elapses.

P84 displays the conditioned air supply temperature (T3 display) in F or C. Not adjustable by technician.

P100 enables the user adjusted dimming control for the display. 0=Inactive, 1 Active.

P101 adjusts how long the display will stay bright in active mode before it dims to inactive, in seconds. The minimum is 30 seconds. 0=30 seconds up to 99 seconds.

P102 adjusts how bright the dim setting is in terms of percent of full brightness.

P105 adjusts how bright the bright setting is in terms of percent of full brightness during the active mode.

P201 displays the microprocessor board version.

B. User Parameters Table

PARAMETER	SELECTION OPTIONS	SELECTION POSITIONS
P30- Beeper enable	Select 0 or 1	0- Disable, 1-enable
P40-Filter counter	Hours/10- 0 thru 999	Read Only
P41-Filter counter reset	Select 1 to reset	Defaults back to 0
P42-Filter Alarm Delay	Days, select 0 thru 180	0- Disable
P84-Conditioned Air Supply Temperature Value (T3 display)	F or C	Read Only
P100-Enable Dimming	Select 0 or 1	0-Disable, 1 Enable

P101-Dimming time	Min, Select 0 through 10	Defaults to 5
P102-Dimming brightness	% 1,5,10 through 90	Defaults to 10
P105-Brightness in active state	% 50 through 100	Defaults to 100
P201-Displays microprocessor board version	N/A	19 through 24-Read Only

SECTION X - ALARM CODES LIST

A. Alarm Codes Table

Displays **AL** in Place of Room Temp. Alarm Code is Displayed in the Lower Left Corner.

ALARM CODE	MEANING OF CODE	STATUS OF CODED ITEMS
A1	Customer or custom input	Optional, Normally Closed
A2	Customer or custom input	Optional, Normally Open
CP	Condensate pump fault	Standard
LP	Low Freon level detected	Standard
HP	High Pressure detected	Standard
FD	VFD Fault	Standard
PH	Incoming Power Fault	Standard
FL	Run time for filter elapsed, Alert only-No system shut down	Standard
FS	Freezing detected	Optional
DC	Deicer in **COOL**	Optional
t 3	Not An Alarm Code. This code indicates supply air probe is activated	Displays supply air temperature. Refer to **Section VIII, Technician Parameter Settings**, Code P12

SECTION XI - KPO TROUBLESHOOTING GUIDE

This Troubleshooting Guide provides a list of the most common problems and the most common solutions. Please contact 1-800-KWIKOOL (1-800-594-5665) if there are any questions.

STARTUP TROUBLESHOOTING CHART

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
System starts up and cools in **COOL** Mode, but hot air exhaust fan speeds up and slows down.	Normal operating condition in **COOL** mode, especially in low temperatures	No action required. Review operations guide. Condenser fan may slow down and speed up. This is a normal operating condition. The hot air exhaust fan is not on in **HEAT** or **FAN** mode
System starts up but is not operating in the selected mode.	System is in time out.	• Wait 3 minutes. Review **Section IV, Unit Operations**. • Control set-up. F or C should be flashing to indicate the unit compressor short cycle timer in use. • Press Up or Down buttons to adjust setpoint as desired. When time out is complete the selected mode icon will blink on and off. **HEAT** or **FAN** mode does not have a time delay.
	Control is set above or below room temperature.	
	Control is adjusted out of operating parameters.	
Power is supplied but control is blank	Low voltage circuit is not engaged	• On 12- & 25-ton models, turn on built-in breaker. • On all models, verify incoming power to transformer. Reset switch on low voltage transformer if tripped on KPO12 & 25
Cool air flow is limited. Water is dripping from the front of the system	• Supply or return duct is collapsed, blocked or not installed. • Filters need to be replaced and/or the evaporator coil is freezing as a result of the above.	• Verify that supply and return duct are installed to specification. • Remove or add duct as needed. • Check air filter for blockage. Restart when thawed.
Condensate is not pumping	Water is below pumping level. System is in **FAN** or **HEAT** mode.	Reservoir fills, Check for line crimping. Condensate is not developed in **HEAT** or **FAN** Mode.

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
Display reads **CP**. System sounds audible alarm.	Mechanical system has detected high water level in the condensate pump. System not level.	• Confirm system is level. • Inspect condensate pump for overflow and proper operation • Clean out pump reservoir. • Check condensate line for clog or crimping. Resets automatically upon correction.
Display reads **HP**.	Mechanical system has detected high pressure. The High Pressure switch is tripped.	• Correct condition with air flow in or out of the condenser. • Inspect/replace condenser drive belts. • Check condenser motor for proper operation. • Check condenser drive (VFD) for trip, reset if needed. High-pressure switch requires manual reset. The pressure switch is located in the service compartment on the compressor discharge line, or in the return air compartment on KPO25 (there are 2 reset switches on this system).
Display reads **LP**.	Mechanical system has detected low pressure.	• Install service gauges to view pressure readings below 20 psi. • Repair any leak before recharging with Freon • Check for icing on the evaporator coil or low return air temperature. Resets automatically upon correction.
Chatter or hum is heard from the control box while unit is operating.	Incoming source power is poor. This is not adjustable thru the phase monitor.	Correct incoming power.
	Low voltage component is faulty.	Isolate low voltage controls to find faulty component.
Evaporator coil is freezing in **COOL** mode.	Low return air temperature out of factory specifications.	Direct return air to area of highest heat load. Review duct engineering.
	Mechanical system malfunction.	Install service gauges to view pressures. Review duct engineering.

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
	Undersized capacity, unit constantly on, unable to achieve set point.	Add KwiKool system. Adjust set point to allow unit to cycle.
	Low or restricted air flow.	Replace air filters.
	Service door open or off.	Close service compartment door.
Control displays **A1**, if equipped.	Appears when Input from A1 is opened.	Fault detected from **A1** input, confirm usage, and call 1-800-KWIK-OOL if input code is not used but is displaying.
Control displays **A2**, if equipped.	Appears when Input from A2 is closed.	Fault detected from **A2** input, confirm usage. Call 1-800-KWI-KOOL if input code is not used but is displaying.
Control displays **FD.**	Appears when Input from FD is engaged.	Always displays initially when system has lost power or shut down due to alarm. This occurs when the Condenser VFD has a fault or loses power. Check VFD and all condenser fan and motor components including belts and pulleys
Hot air exhaust fan (condenser fan) stops. High-Pressure Switch trips while the compressor is operating. Control displays **FD**.	Condenser VFD has detected a fault with the incoming electrical power or is not receiving an operating signal.	Check condenser motor drive (VFD) for trip. Reset if needed. **NOTE** *Fault Code is displayed on the drive. Call 1-800 KWIKOOL if problem persists.* • The drive is located in the return air compartment on KPO5 & KPO12. • On KPO25 systems the drive access is in the compartment to the right side of the control.
Control displays **FL** If applied.	Appears when the time set for filter change has elapsed.	• Replace as needed. • Reset time for filter change. Found in User Parameters, Code P41. • Check condition of air filters
Control displays **FS**, if equipped.	Appears if the evaporator coil is below 28 F.	Using the **MODE** button, move from **COOL** to **FAN** for 10 minutes to help coil thaw. Automatic reset upon thawing.

SECTION XII - TROUBLESHOOTING GUIDE FOR SYSTEMS EQUIPPED WITH A PHASE MONITOR

Troubleshooting Table for 3-Phase Systems with Phase Monitors

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
• Control displays **PH.** • Audible alarm fails to clear on start-up. • Phase monitor displays **PHASE REV.**	Phase monitor detects reverse phasing, lost phase or improper power incoming.	• Exchange any line voltage wire with the other, **DO NOT CHANGE THE GREEN WIRE** • View the power monitor in the control box to see that the fault clears by pressing the fault reset button for 3 seconds and then release it. **NOTE** *Allow 30 seconds for the phase monitor to start up after power disconnect.*
LOW VOLTAGE • Control displays **PH.** • Audible alarm fails to clear on start-up • Phase monitor displays **LOW VOLT.**	Phase monitor detects voltage lower than factory setting.	• View the power monitor in the control box to see what voltage is displaying on the screen. • Adjust the incoming voltage. • Users may adjust the incoming voltage tolerance to match the incoming power by pressing the select or set-up button and then use the down arrow to match incoming power. **DO NOT ADJUST ANY OTHER SETTING.** Auto reset upon correction.
HIGH VOLTAGE • Control displays **PH.** • Audible alarm fails to clear on startup • Phase monitor displays **HIGH VOLT.**	Phase monitor detects voltage higher than factory setting.	• View the power monitor in the control box to see what voltage is displaying on the screen • Adjust the incoming voltage. • Users may adjust the incoming voltage tolerance to match the incoming power by pressing the select or set-up button and then use the up arrow to match incoming power. **DO NOT ADJUST ANY OTHER SETTING.** Auto reset upon correction.

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
• System with phase monitor starts up but displays **PH.** • Audible alarm when the compressor starts.	Phase monitor detects voltage drop.	• Observe the phase monitor on Start for fault lights and adjust the monitor accordingly. • Verify incoming power. • Check wire size and voltage drop. Auto reset upon correction
• KPO control displays **PH.** • Phase monitor displays **Back fault.**.	A fault has been detected from one of the load side of a component circuit.	Inspect motor components for faulty or loose connections and proper operation. This includes Evaporator Fan, Compressor, and Condenser Fan.