

KBA600, KBA1000, KBA600P(lus) & KBA1000P(lus)

Operation Manual

KwiKool Bio Air and Bio Air Plus Series

Operation Manual

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Part C: Charcoal Filter

Before installing and using your KwiKool Bio Air (KBA) or KwiKool Bio Air Plus (KBAP) system, read this manual carefully for instructions and proper usage and all safeguards. This manual should be retained for future reference.

## I / Unit Components.

KBA

KBA Plus



KBA Control

KBA Plus Control



## II / Description

- A. Bio Air KBA series is designed as an attractive stand-alone negative air machine. It comes equipped with a duct collar designed to attach to the top of your BIOAIR. The size of the collar for a 600 model is an 8" and the 1000 model is 10". Both models can also accept an optional 12 inch duct and collar (not included with the unit and is designed for use with CK12S ceiling kit or 12" ducting). Ducting to outside the space is necessary to create a negative pressure. Using the unit without ducting to outside of the space allows the unit to be utilized as a HEPA filtered room air circulator.
- B. BioAir KBA Plus series is a multifunctional machine. This product comes equipped with 2 plates and a duct collar. By adding and removing the plates or collars, this versatile machine can function as:
  - 1. An Air Scrubber - only top plate installed
  - 2. A negative Air Machine – Front plate installed and top collar with ducting installed
  - 3. A combination Air Scrubber/Negative Pressure Machine. Only top collar and ducting installed.

### III / Assembly and Installation-

- A. KBA600 and KBA1000 Arrive from the factory ready to operate after it is removed from the packing. Only attachment of the collar, optional ceiling kit or user supplied ducting is required.
- B. KBA600P and KBA1000P users will need to remove one or both cover plates on the supply air before operating and/or install the duct collar to the top of the unit. **See illustration.** Remove the front cover plate by extracting the 4 screws on each corner of the front cover plate, replacing the screws into the unit when the plate is removed. And/or removing the top cover plate by removing the 6 screws attaching the plate. Install the included collar to the unit using the screws from the top plate, if using the unit to produce negative air pressure. You may choose to operate the system with one or both plates removed dependent on your application requirements. The front plate removed will direct the air flow through the quad directional vents and the top plate removed will direct the air flow through the top flange. When both plates are removed the supply air divides the airflow through both openings.
- C. Ceiling Kit- For all KBA & KBAP systems (Optional Accessory used to create a negative pressure in your space). The ceiling kit is comprised of a flange with foam tape, fasteners, 1 eight foot length of flexible duct, duct clamps, and one 24"X24" replacement ceiling tile. The tile is used in drop ceiling grids but is not limited to only that use. It can be used through any opening that is approved for the filtered air to pass such as a window or a vertical opening in a wall. Follow these installation steps:
  - 1. Align the holes of the flange to the holes located on the top of the unit on the outside perimeter of the installed collar; there is no need to remove the factory installed collar. Attach to the top of the KBA or KBAP unit using the factory supplied # 2 Phillips fasteners.
  - 2. Attach the duct to the flange on the replacement ceiling panel; secure the duct to the flange using the supplied clamp.
  - 3. Install the panel in the ceiling grid or in your approved opening with the duct attached, connect the open end of the duct to the flange on your KBA or KBAP and secure with supplied clamp. Be sure the area where you are ducting is approved for the filtered air.
  - 4. **\*\*For Ceiling Kit Users\*\*** - This kit is used to create a negative pressure in your space by ducting the filtered air out to a different sealed area, this allows fresh air to be pulled into your space. Be sure the filtered air is approved to enter another space before installation. The ceiling kit is not limited to ceiling use and may be used on any vertical or horizontal surface that it can be mounted to. If utilizing this Kit, the space above the ceiling must be an open plenum or have a makeup air and a path for exhaust.
- D. Freestanding Applications-For all KBA and KBAP systems. Use your KBA or KBAP to filter and refresh air in your space by placing the system in the space you desire to operate in and turn the system on to start the filtering process. The KBA and KBAP will work to improve the overall air quality by re-circulating the air in the room through its filters and on KBAP systems filters and Ultra Violet lights.
- E. Charcoal Filter- Optional Accessory. Order installed from the factory or later as a user installed option. The charcoal filter helps to eliminate and reduce odors in your space. See Appendix C for installation and set-up guide.

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

F. Power Connection - Verify that the source power, phase and breaker size is compatible with your KwiKool Bio Air serial plate information and that the electrical circuit is dedicated only for the use of your KwiKool Bio Air unit. If you aren't sure about your power, contact a licensed electrician. KwiKool Bio Air 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 Bio Air. KBA and KBA Plus systems come supplied with a factory installed male power plug and require the exact receptacle to match the plug and exact circuit size and power. Cutting the power plug on your KBA or KBAP unit will void its warranty.

#### IV / Operational Safeguards

Read the following safeguards carefully before installing your KwiKool Bio Air

- A. Do not operate or install your KwiKool Bio Air unit in a potentially explosive, combustible, or corrosive gas atmosphere.
- B. Keep your KwiKool Bio Air system away from flammable materials and open flame.
- C. To avoid electrical shock keep your KwiKool Bio Air system away from direct contacts with water and any liquids. Do not touch your system with wet hands.
- D. To insure your KwiKool Bio Air 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 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 components.
- G. Do not place objects on top of your unit.
- H. Do not insert your hand or any other object into the air supply.
- I. Do not operate your KwiKool Bio Air system with its service doors open.

- J. If your KwiKool Bio Air system makes abnormal noises or vibrations, call KwiKool at 1-800-594-5665.

#### V / System Operation KBA Plus Only

A. Select your KBAPlus operational function; before using your system, choose the operation you would like your system to perform.

1. **Use as an air scrubber-** The KBAPLUS is the only product capable of being used in this manner. The system is placed in the space that you would like to filter and refresh, be sure the filter grill is fully exposed in the space. For odor control, add the optional charcoal filter to your system. KBA PLUS systems also include dual UVC Ultra Violet lights with a reflective chamber to aid in reducing pathogens, molds and biological contaminants. When configured, the system works to remove particulates from the space by pulling in the surrounding air, filtering it then processing the filtered air through the UVC lights. The processed air is supplied back into the space. KBA PLUS gives you supply air distribution options. Remove the front vent cover just above the control to allow the processed air to supply through the multidirectional vent, or you may choose to remove the top vent cover to allow the processed air to supply through the top. Remove both vent covers to distribute the air through both supply points.

2. **Use as a negative air machine-** KBA PLUS systems can be configured to remove air from a sealed space, creating a negative pressure in the space to allow for fresh air to be exchanged with the ambient air, the filtered air discharged is directed out of the space. This is achieved with the optional ceiling kit (see section III, paragraph B), or use the factory supplied flange on the top of the system by connecting duct to the flange and directing it out of the space (25' Max). The KBA600P is equipped with an eight inch collar and the KBA1000P is equipped with a ten inch collar, the KBAP can be fitted with a 12" collar for optional ceiling kit use. Note: Be sure and remove the cover from the top flange before connecting duct on KBA PLUS systems. Note: Reducing the diameter of the collars or duct will decrease the effectiveness of your system.

3. **Use as a Combination Air Scrubber and Negative air Machine,** -KBA PLUS is the only product capable of being used in this manner, To use, remove the directional vent cover and the top cover, then attach the duct collar and duct. Direct the duct to your desired location outside of the space, (25' Max) or connect the optional ceiling kit (section III paragraph B). Your KBA PLUS is now configured to be both an air scrubber and negative air machine and will supply filtered air back into your space through the directional vent while ejecting processed air out of the space creating a negative pressure that pulls in fresh air.

#### V / System operation KBA

B. Select your KBA operational function; before using your system, choose the operation you would like your system to perform.

1. Use your KBA to filter and refresh air in your space by placing the system in the space you desire to operate in and turn the system on to start the filtering process. The KBA will work to improve the overall air quality by re-circulating the air in the room through its filters and supplying




the filtered air back into your space. For odor control order the optional charcoal filter with your KBA system.



2. KBA system can be configured to remove air from a sealed space, creating a negative pressure in the space to allow for fresh air to be exchanged with the ambient air, the filtered air discharged is directed out of the space. This is achieved with the optional ceiling kit (see section III, paragraph B), or use the factory supplied flange on the top of the system by connecting duct to the flange and directing it out of the space (25' Max). The KBA600 is equipped with an eight inch collar and the KBA1000 is equipped with a ten inch collar, the KBA can be fitted with a 12" collar for optional ceiling kit use. Note: Reducing the diameter of the collars or duct will decrease the effectiveness of your system.

C. Apply Electrical Power - Once power is engaged by plugging in your system, your KBA600PLUS and KBA1000PLUS display will come alive and show the current room temperature. The unit is set to OFF and the fan is set to high. If your system is not indicating that power is supplied after plugging it in, refer to the troubleshooting guide in this manual.

D. Apply Electrical Power - KBA600 and KBA1000 once power is engaged, the ON/OFF switch will display a red light to indicate power is connected. If your system is not indicating that power is supplied after plugging it in, refer to the troubleshooting guide in this manual.

E. Control Panel for **KBA600PLUS & KBA1000PLUS** - The control panel display shows the current operational status of the unit and the current room temperature.

1. **ON/OFF** Button  - Pressing this button on your control panel engages or shuts down your KBAP 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 KBAP is alerting an alarm after selecting ON.
2. **MODE** Button  - Is not operational in this system.  Is displayed above this button.
3. **FAN** Button - A short press on the **FAN** button will cycle through the fan speeds. Each press cycles the fan from low, medium and high, signified by an ascending set of arrows above the **FAN** button.

**. USER PARAMETER SETTINGS**  - Entrance into this function is gained by a Short press on the “Settings” button  **.NOTE**; A 5 second press on this button changes the display to F or C temperature display. Use the **FAN** and **Mode** buttons to scroll through the available parameters

#### 5. Operating Parameters List

P30- Beeper enable	Select 0 or 1	0- Disable, 1-enable, Default is 1
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	90 is default 0=Disable


P100- Enable Dimming	Select 0 or 1	0-Disable, 1 Enable, default is 1
P101-Dimming time	Min, Select 0 through 10	Default is 5
P102Dimming brightness	% 1,5,10 through 90	Default is 10
P105-Brightness in active state	% 50 through 100	Default is 100
P106-UV light time settings, hours/100	0...999=99900 Hours	Default is 150 (15000 hours=625 days) 0=Disable
P107-UV light elapsed time, hours/ 100	999=99900 Hours	Read Only
P108-UV Light Counter Reset	Select 1 to Reset	Defaults back to 0

A. Control panel for KBA600 & KBA1000- The control panel of these systems is comprised of 2 rocker switches and an indicator light to alert operators of scheduled maintenance.

1. Operating the rocker switch on the left as you face the control engages the system to ON or OFF. The ON/OFF switch is illuminated when power is supplied
2. Operating the rocker switch to the right as you face the control selects high or low speed FAN.
3. The indicator light is ON when Filter maintenance is required. This light displays only in high speed fan.

B. Apply Electrical Power, KBA Systems-once power is engaged, the ON/OFF switch will display a red light to indicate power is connected. If your system is not indicating that power is supplied after plugging it in, refer to the troubleshooting guide in this manual.

## System Operation

1. **Turn On Your KwiKool Bio Air SystemKBAPlus-** Pressing the ON/OFF button on the touch screen will put your unit in the ON position and the system will begin to operate, starting the fan in the selected speed and turning on the UV lights, operators do not have control of the UV light operation, the lights are automatically operational when ON is selected.
2. **Turn On your KwiKool Bio Air system KBA-**Select the ON position with the lighted ON/OFF rocker switch and your system will begin to operate. The supply air fan starts in the chosen fan speed.
3. **Select your fan speed-KBA** systems have a 2 speed fan that is adjusted by changing the position of the fan speed rocker switch on the control panel. Note: The air flow monitor light, if engaged, will only display in High Speed fan.
4. **Select your fan speed-KBA Plus** systems have a three speed fan,a short press on the **FAN** button will cycle through the fan speeds. Each press cycles the fan from low, medium and high, signified by an ascending set of arrows above the **FAN** button.
5. **Ultra Violet LightsKBA Plus-** users do not have control of the UV lights. The lights are on when ON is selected.
6. **Turn Off your KBAPlus system-** Use the ON/Off button  to shut your system down, the fan will stop operation, the UV lights will turn off and the KBAP system will hold in the memory the previous fan setting.
7. **Turn Off your KBA system-** Use the illuminated ON/OFF rocker switch on your KBA to shut your system down, the fan will turn off and the KBA system ON/OFF switch will be illuminated as long as power is supplied to the system.



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

- A. Automatic restart- Your KBA & KBA Plus systems will automatically restart if power is lost and then restored. The system resumes operation in the previous selected settings.
- B. UV light safety switch- KBA Plus Only, to prevent accidental exposure to the Ultra Violet light, KwiKool engineers have added a switch to turn the UV lights off when the HEPA filter is removed from the return air compartment where the UV lights are located. The lights will resume operation when the filter is reinstalled and the system is in the ON position.
- C. Filter and UV light elapsed time counter-KBA Plus systems only. Users are able to set the control to alert personnel with a visual display on the control when maintenance is required to the UV lights and filter (as described above). Your KBA Plus will display **FIL** when the filter timer has elapsed; the factory default setting is 90 days, the pre-filter may need to be inspected and cleaned more often, see maintenance section VII. Your KBA Plus will display **UL** when the UV light timer has elapsed; the factory default setting is 15000 hours (625 days). The factory recommends replacing both bulbs at this time to ensure best efficiency. See Maintenance section VII for step by step instruction.
- D. Filter air flow monitor-KBA systems only. Your KBA system will display a red indicator light on the control panel when it is time to service the system air filters, the pre-filter may need to be inspected and cleaned more often. See maintenance section VII for step by step instructions. NOTE: The indicator light for the air flow monitor, if engaged, will only display in HIGH Speed Fan operation
- E. Locking casters-To prevent un-intended movement of the system, locking casters are installed on the front of all KwiKool Bio Air systems. Move the system to a level surface and move the locks on the casters to the ON position. Move to OFF when moving the system.
- F. Stainless Steel Cabinet- Provides a durable and attractive package that will blend in to most any environment.
- G. Smooth and reflective insulation inside the return air compartment of the cabinet retards pathogens and microbe growth and also reflects the UV light in KBA Plus systems.
- H. Washable and reusable pre filter factory installed in all KwiKool Bio Air systems to help preserve the HEPA filter.
- I. Optional Charcoal filter-Removes odors from returned air and supplies refreshed air into the space. Can be ordered from the factory or installed later on all KBA and KBAP systems.

#### VIII / Application Requirements.

- A. Positioning of Unit -The unit should be positioned so that the output of the unit can be focused as close to the space to be filtered and refreshed 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 and can cause low performance.

- B. Lock the casters-Be sure the system is on level ground to prevent un-intended movement of the system. Move the lever on the casters to ON to secure the system.
- C. Water and Moisture-The KBA & KBA Plus is not rated for outdoor use; avoid using the systems in damp and wet areas or transporting them in uncovered vehicles.
- D. Power-Each KBA or KBA Plus system must have its own dedicated power to operate. Extension cords are allowed, but no longer than 25'.

## VII / Maintenance

**A. Pre Filter-** KBA& KBAP systems come from the factory with a washable pre-filter installed on the evaporator inlet to prevent dust and debris from entering the HEPA filter that is also pre-installed. You will need to periodically clean the pre-filter based on your air quality, for optimum performance inspect/clean this filter every 30 days, and more often if operated in poor air quality. Open the filter access door, below the control by releasing the 2 slotted fasteners on the right side of the compartment. Remove the pre-filter from the door frame and use a compressed gas in an approved area wearing the proper PPE to blow through the filter to remove loose particles and then rinse the filter with clean water, allow complete drying before re-installing. Failure to maintain the pre filter will cause restricted air flow and low overall unit performance.

**B. Filter Replacement:**ULPA/HEPA filters 21"X13.5"X4".

For optimum performance, inspect/replace HEPA filters every 90 days of operation.

Unplug your system - Remove any and all power sources from the unit.

Access the filters - Loosen the two screws on the filter access door until the door Opens.

Remove the charcoal filter (optional) - Remove the charcoal filter by sliding the filter forward past the frame and set aside. Replace if needed.

Remove the ULPA/HEPA filter –Pull forward on the top of the filter until it stops, then pull forward on the bottom of the filter until it stops, use this method alternating top to bottom until the filter clears the frame. Do not jam the filter by pulling too hard.

Install the new ULPA/HEPA filter - Noting the correct air flow direction, push the ULPA/HEPA filter into the housing.

Install the optional charcoal filter - Push the top edge of the charcoal filter into the lip of the frame and then repeat for the bottom. Close the front panel. Push the front panel closed and tighten the screws until they are firmly secured.

## UVC Bulb Replacement KBA Plus Only

**Bulb** - Max Voltage: 210 Volts | Max Wattage: 85 Watts. Call 1-800-KWIKOOL (594-5665) for replacement UVC bulbs.

**Bulb Replacement:**

Unplug your system - Remove any and all power sources from your system.

Open the filter access door –Loosen the 2 slotted fasteners on the filter panel until the door opens.

Remove the optional charcoal filter, if installed by pulling it forward from the frame. Remove the ULPA/HEPA filter – Pull forward on the top of the filter until it stops, then pull forward on the bottom of the filter until it stops, use this method alternating top to bottom until the filter clears the frame. Do not jam the filter by pulling too hard. Once removed, the return air compartment is revealed and the UV bulbs are visible at the bottom of the compartment. For best results replace both UV bulbs at the same time to ensure the most efficient operation of your KwiKool Bio Air Plus. Unplug the UVC bulb - With one hand holding the plug and the other holding the white end cap of the bulb in place, pull the two apart. Remove the bulb from your system - Reach inside the unit and pull the bulb out of its retaining clips from the middle of the bulb. Properly dispose of the old UVC bulb.

Install the new bulb - Take the bulb in your hand, slide your hand with the bulb into

the cavity, then push the bulb in to its clip in the same manner you pulled the bulb out.

Plug in the new bulb - Hold the bulb in place with one hand and push the plug on to the connector with the other. Keep in mind that the connector is not meant for any direction. The male connection will not match up with the female portion if the orientation is incorrect. If they do not match up, rotate the plug 90 degrees and try again.

Re-install filters and close the filter door - Rotate the screws clockwise to securely close the door.

C. Charcoal filter installation for all KwiKool Bio Air systems- This section covers the set up and installation of the charcoal filter in the field, users that have ordered the charcoal filter installed from the factory will not need to complete these steps. Open the filter access door –Loosen the 2 slotted fasteners on the filter panel until the door opens. Remove the ULPA/HEPA filter – Pull forward on the top of the filter until it stops, then pull forward on the bottom of the filter until it stops, use this method alternating top to bottom until the filter clears the frame. Do not jam the filter by pulling too hard. Once removed, you will see 4 rails attached to the sides, top and bottom of the compartment, these rails stop the HEPA filter from going into the compartment. Remove the 2 5/16<sup>th</sup> fasteners that are in each rail and move each rail to the next set of holes in front of the holes that you just removed the fasteners from.

Once all 4 rails have been moved back, re-install the HEPA filter. You will notice the HEPA filter recedes back an extra 1”.

This allows the charcoal filter to be inserted flush into the frame. Install the charcoal filter by lining the filter up with the space in front of the HEPA filter and push it into place, close the access door and operate your KwiKool Bio Airsystem as normal.

## VIII / Utilizing your KwiKool System

KwiKool Bio Air utilizes a process that is engineered to meet the high Demand for cleanliness in a hospital or other critical environments. This process significantly reduces airborne particulates and microorganisms as well as drastically reducing the potential for air conditioner related contaminates.

### KwiKool's Bio Air exclusive “air therapy” process:

**Cleans** - ULPA filter - a high efficiency ULPA filter which filters 99.999% of particulates greater than .12 microns in size.

**Disinfects**—KBA Plus only, Internal UVC light is used to further reduce microorganisms by irradiating the internal surfaces of the return air chamber.

**Retards Growth**- Non porous and smooth surface insulation helps drastically reduce the ability of molds or other microbes from attaching and forming in the return air compartment.

## X / Fault Codes KBA Plus Only

Your KwiKool Bio Air Plus System displays a fault code to indicate that maintenance is needed on your system; the nature of themaintenance is displayed on the touchscreen panel. See the troubleshooting guide later in this manual for further information.

UL = 15,000 hours have elapsed (625 Days) with the UV bulbs in operation. (Factory setting, may be modified by administrators)

FIL = 90 days of operation have passed with the currently installed filters.(Factory setting, may be modified by administrators).

A1 = Customer installed device on the KBA Plus system is activated (if equipped)

F1 = System is being operated in an ambient temperature below 28 degrees F.

## XI / KBAP and KBA Troubleshooting Guide

### Fault on KBAP Control

Control displays **UL**, on start up or while operating, AL blinks on control, system continues to operate.

#### Possible Cause

15,000 hours have elapsed (625 Days) with the UV bulbs in operation. (Factory setting, may be modified or turned off by administrators)

#### Possible Solution

Replace Ultra Violet lights in return air compartment as described in the Maintenance section VII paragraph C. Then reset the counter in User Settings, P108 is set to 1 to reset.

#### Fault

Control Displays **FIL** during start up or while operating, AL blinks on control, system continues to operate.

#### Possible Cause

90 days have elapsed with the currently installed filters in operation. (Factory setting, may be modified or turned off by administrators)

#### Possible Solution

Replace HEPA Filter in return air compartment as described in the Maintenance section VII paragraph B. Then reset the counter in User Settings, P41 is set to 1 to reset.

#### Fault

Control Displays **A1** during start up or while operating, AL blinks on control. System shuts down (Optional add on control).

#### Possible Cause

Microprocessor board has detected customer installed device is activated.

#### Possible Solution

Consult with administrator to determine aftermarket device installed, and corrective action to take.

#### Fault

Control Displays **F1** during start up or while operating, room temperature display is replaced on control by - -, system continues to operate.

#### Possible Cause

Microprocessor board has detected return air temperature below 28 degrees F. This alarm might cycle on and off.

#### Possible Solution

Normal operation in low ambient temperature, no action required.

#### Fault

System is ON but the microprocessor board resets when the system attempts to start.

#### Possible Cause

Microprocessor board detects voltage drop below operating parameters.

#### Possible Solution

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 KBA Plus.

#### **Fault KBA & KBAP**

Control is blank on KBAP systems on KBA systems the rocker switch is not lit red.

#### Possible Cause

Power circuit is not engaged, system is not plugged in.

#### Possible Solution

Check source power breaker and verify incoming power to connector, plug the system into the proper outlet. Call 1-800-KWIKOOL for assistance.

#### Fault

System trips breaker on start up

#### Possible Cause

Incoming power is incorrect, breaker is undersized or faulty, and or extension power cable is too long and undersized.

#### Possible Solution

Verify the circuit and extension power cable is within the systems specifications, consult with your electrician or call 1-800-KWIKOOL for guidance.

#### Fault

Supply air flow is limited; KBA control displays a red light, Only in high speed fan.

#### Possible Cause

Air flow is slowed by pre-filter need for cleaning or HEPA filter need for replacement.

#### Possible Solution

Refer to the maintenance section of this guide for replacement steps. VII paragraph B

#### Fault

Ultra Violet lights are not on, KBAP systems only

#### Possible Cause

HEPA filter is not installed, bulb life is expired, system is not equipped, switch is displaced or faulty

#### Possible Solution

Confirm HEPA filter is installed and activating the safety switch, refer to the maintenance section for bulb replacement steps, confirm your system is equipped with UV lights, call 800-KWIKOOL if switch is depressed and not activating the UV lights.