

# ATTIC MASTER KAM14 PORTABLE COOLING SYSTEM



## Operation Manual

## Table of Contents

<b>SECTION I</b>	<b>UNIT COMPONENTS .....</b>	<b>3</b>
A	ATTIC MASTER KAM14 PORTABLE COOLING SYSTEM .....	3
<b>SECTION II</b>	<b>ASSEMBLY AND INSTALLATION.....</b>	<b>6</b>
A	POWER CONNECTION .....	6
B	CONDENSATE TANK .....	6
C	KAM UNIT AND INSTALLING THE SUPPLY AIR DUCT .....	6
<b>SECTION III</b>	<b>OPERATIONAL SAFEGUARDS .....</b>	<b>7</b>
<b>SECTION IV</b>	<b>SYSTEM OPERATION.....</b>	<b>8</b>
A	CONTROL PANEL .....	8
B	UNIT OPERATION .....	8
C	CONDENSATE TANK OPERATION .....	9
<b>SECTION V</b>	<b>BUILT IN SAFEGUARDS .....</b>	<b>10</b>
A	HIGH-PRESSURE SWITCH AND ALARM .....	10
B	COMPRESSOR TIME DELAY .....	10
C	CONDENSATE TANK AND HIGH LEVEL ALARM .....	10
D	SERVICE PORTS.....	10
E	AUTOMATIC RESTART .....	10
<b>SECTION VI</b>	<b>APPLICATION REQUIREMENTS.....</b>	<b>11</b>
A	AIR TEMPERATURE REQUIREMENTS .....	11
B	POSITIONING OF UNIT.....	11
<b>SECTION VII</b>	<b>MAINTENANCE .....</b>	<b>12</b>
A	RETURN AIR FILTER .....	12
<b>SECTION VIII</b>	<b>UTILIZING THE KAM SYSTEM .....</b>	<b>12</b>
<b>SECTION IX</b>	<b>AUDIBLE ALARMS.....</b>	<b>13</b>
<b>SECTION X</b>	<b>KAM14 TROUBLESHOOTING GUIDE .....</b>	<b>13</b>

## SECTION I UNIT COMPONENTS

A

*Before installing and using the KwiKool KAM14 Portable Cooling System, read this manual carefully for instructions on proper usage and all safeguards. This manual should be retained for future reference.*

### **ATTIC MASTER KAM14 PORTABLE COOLING SYSTEM**

The KwiKool Attic Master KAM14 Portable Cooling System (hereinafter known as KAM or KAM14) is designed to move cool air up to 90 feet into a confined hot ambient environment in order to provide spot cooling in difficult-to-reach areas such as crawl spaces, attics, etc. The KAM uses flexible 30-foot long air chutes (30 feet of duct is included, up to 60 feet additional duct is purchased separately). The specially made insulated duct is guaranteed not to form condensation on the outside of the duct. The outside duct covering has air holes, which allow it to be easily compressed back into its carry bag. This model has a capacity of 1.1 tons.

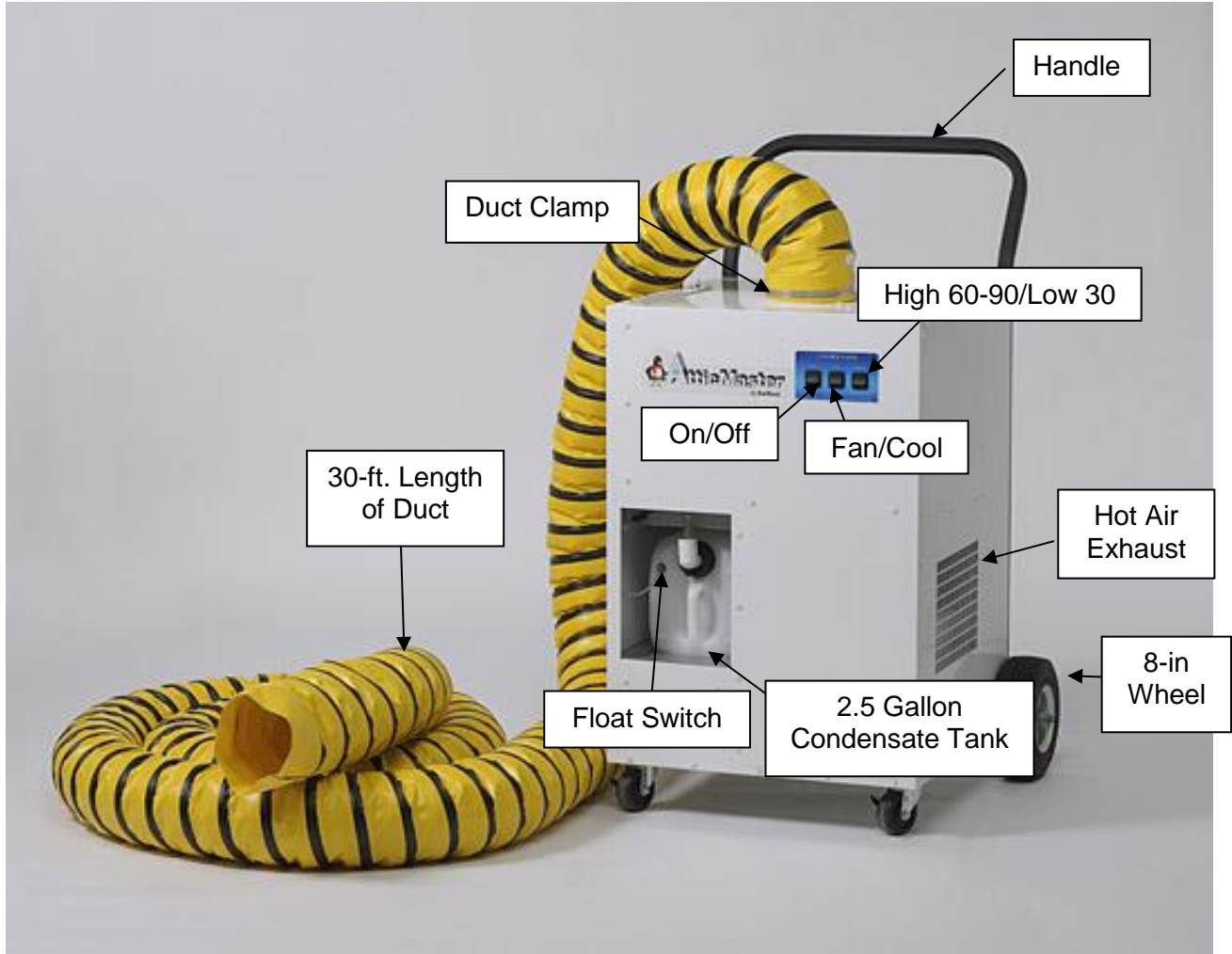
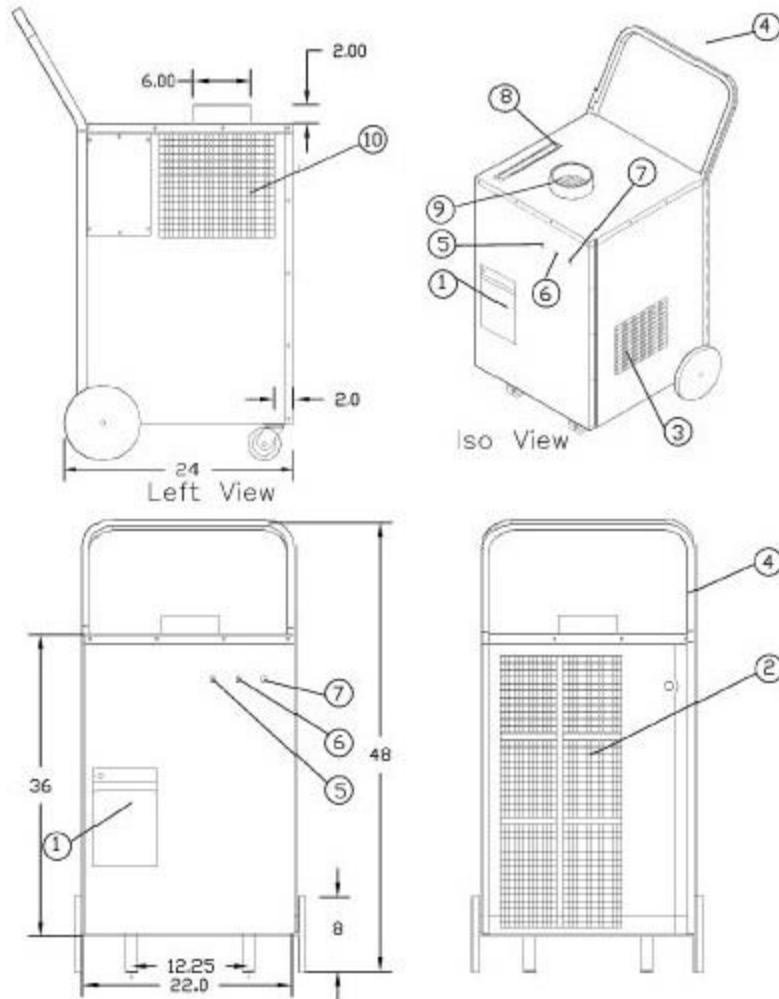


Figure 1- Attic Master KAM14 Portable Cooling System



# KAM1411

**LEGEND**

- |                                    |                                 |
|------------------------------------|---------------------------------|
| 1. Condenser Tank Access Door      | 6. 2 Position Fan/Cooler Switch |
| 2. Condenser Air Intake Grill      | 7. 2 Position High/Off Switch   |
| 3. Condenser Hot Air Exhaust Grill | 8. Air Filter Slot              |
| 4. 1" Handle                       | 9. Cold Air Supply Flange       |
| 5. 2 Position On/Off Switch        | 10. Return Air Grill            |

## **SECTION II ASSEMBLY AND INSTALLATION**

### **A POWER CONNECTION**

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

The KAM is factory equipped with 50 feet of power cable sized to meet the power requirement of the system. Extension power cables are NOT allowed to power the KAM.

KAMs are factory equipped with a male electrical plug that requires a matching receptacle to match the plug and exact circuit size and power. Cutting the power plug on the KAM unit will void its warranty.

### **B CONDENSATE TANK**

KAMs come standard with an internal 2.5-gallon condensate tank. The internal condensate tank is equipped with a float switch that shuts down the KAM and alerts operators with an alarm 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 KAM, the collection bottle must be removed, emptied and then re-installed.

Turning the KAM **ON/OFF** switch to **OFF** will stop the audible alarm. See section IV paragraph C for more details.

### **C KAM UNIT AND INSTALLING THE SUPPLY AIR DUCT**

1. Select Location of System - Make sure all sides of the KAM system are clear of fixed objects to avoid restricted air flow or impede operation of the system.
2. Remove duct from bag. Attach duct clamp to the ring on top of the unit. Make sure clamp is tight and run eyelets into the ring.
3. To attach extra 30-ft lengths of duct, squeeze duct end and insert into first duct end loop. A maximum of three 30-ft lengths of duct can be used for a total maximum length of 90 feet. At least one 30-ft length must be connected to the unit for proper back pressure.
4. Plug unit into a dedicated 115-volt/15-amp circuit, such as the outlet for a washing machine.

## SECTION III OPERATIONAL SAFEGUARDS

Read the following safeguards carefully before installing the KAM Portable Cooling System:

### WARNING

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

### WARNING

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

### WARNING

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

### 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 duct and hoses attached to the KAM unit. Only then should the casters be unlocked.

### CAUTION

*To ensure the KAM 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 KAM model. Lock casters to prevent unit movement.*

### CAUTION

*Do not transport the system on its side or overturn the unit, since this could damage the compressor.*

### CAUTION

*Always keep unit in upright position. Do not lay unit down. If the unit is laid down, the unit must be placed upright and not turned on for at least four hours, or compressor damage may occur, due to compressor oil displacement.*

- Do not place objects on top of the unit.
- Do not insert your hands or any other object into the Cold Air supply chutes or Discharge Air grill.
- Do not operate the KAM system with its service doors open.

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

## SECTION IV SYSTEM OPERATION

### A CONTROL PANEL

The control panel display shows the current operational status of the unit. The Attic Master controls are located on the top right side of the front of the unit. There are three switches (See picture below):



1. **ON/OFF Switch:** 2-Position Switch, turns power for unit on or off. Refer to Section X (KAM Troubleshooting Guide) of this manual if the unit is alerting an alarm after selecting **ON**.
2. **FAN/COOL Switch:** 2-Position Switch, turns on unit fan only (**FAN**) or fan with compressor on (**COOL**).
3. **LOW 30'/HIGH 60'/90' Switch:** 2-Position Switch, turns the fan from low speed, for use with a 30-foot duct, to high speed, for use with a 60/90-foot duct.

### B UNIT OPERATION

1. Place the provided duct in the space where cooling is desired.

#### CAUTION

*Ensure the KAM unit is not in the room being cooled, but in a separate space. Only the duct should go to the space being cooled.*

2. Turn On the KAM System - Pressing the **ON/OFF** switch on the control panel will turn the unit **ON**.
3. Press the **FAN/COOL** switch to **FAN**. The fan will start to run. When cool air is desired, put the switch in **COOL**.

#### NOTE

*A 2.5-minute time delay starts when the system is put in **COOL** mode. The compressor will not start until this delay has elapsed. See explanation in Section V (Built-in Safeguards), Paragraph B (Compressor Time Delay).*



4. Press the **Low/High** switch to select the Low Speed or High Speed fan as required by circumstances.

## C CONDENSATE TANK OPERATION



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 KAM 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. Turn the KAM **ON** and continue normal operation.

## SECTION V BUILT IN SAFEGUARDS

### A HIGH-PRESSURE SWITCH AND ALARM

The High Pressure switch, when activated, protects the KAM from potential damage to the mechanical system. When the system pressure exceeds safe operating conditions (approximately 610 psi), the switch is activated and an audible alarm sounds, then the unit automatically shuts down.

The high pressure switch is a manual reset switch located on the Condenser Inlet panel on the back of the system and labeled **HP Reset**. Press in and release. The technician will hear a click. If activated, this switch must be reset manually after it is activated and the condition causing the trip is corrected. See Troubleshooting Guide.

### B COMPRESSOR TIME DELAY

The KAM is protected from potential damage to the compressor by a 2.5-minute delay in starting. This gives the pressures in the mechanical system a chance to equalize. This always activates when the Kam:

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

### C CONDENSATE TANK AND HIGH LEVEL ALARM

All KAMs come standard with an internal condensate tank. The tank is equipped with an overflow safety float switch. When the tank is full, the float safety switch will automatically shut down the unit and sound an audible alarm. This prevents the condensate tank from overflowing onto the area where the system is placed. To continue operation when the bottle is filled, see Section IV (System Operation), Paragraph C (Tank Operation).

### D SERVICE PORTS

The service ports are located on the Condenser Inlet panel on the back of the system and are labeled **H** for high pressure and **L** for low pressure. This gives service personnel a connection point for service gauges to monitor the operating pressures of the KAM's refrigeration system.

### E AUTOMATIC RESTART

In the event of a power loss, the Kwikool KAM resumes operation when the power is restored. All operational functions are preserved, including the **ON/OFF** selection.

#### NOTE

*The compressor will not restart until the 2.5-minute time delay is completed.*

## SECTION VI APPLICATION REQUIREMENTS

### A AIR TEMPERATURE REQUIREMENTS

The environmental requirements of the KAM 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 degrees F, the high pressure switch may trip, stopping the unit's compressor. There may also be diminished performance.

#### CAUTION

*Standard air-cooled KAM models are not designed to operate at temperatures below 60 degrees F. Temperatures below 60 degrees F will cause the system to freeze and/or diminish its performance and can void the warranty.*

### B POSITIONING OF UNIT

Do not place the KAM in direct sunlight. The unit should be positioned so that the output of the duct can be focused as close to the space or person being cooled as possible. The KAM 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.

#### CAUTION

*Do not block any air inlet of the unit, since this will cause a restriction in the airflow and can cause low performance and/or Evaporator Coil freezing or High Pressure trip.*

#### CAUTION

*Not allowing at least 6 inches of space between the inlet and a wall or fixed object will cause decreased performance and/or high pressure safety trip.*

## SECTION VII MAINTENANCE

### A RETURN AIR FILTER

KAMs have a washable and re-useable Return-Air filter installed on the Evaporator Inlet. This filter should be removed and cleaned periodically.

#### CAUTION

*Filters should be cleaned as needed or at least once every two months. Remove the reusable filter from slot on top of unit by turning the two latch screws. See photos below.*

#### CAUTION

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



1. When the system is not in operation, with the power disconnected, remove the filter by loosening the two fasteners shown, then pull the filter up and out.
2. Clean the filter by rinsing it with water or blow it out using a compressed gas. Do not use excessive pressure when cleaning.
3. Allow the filter to dry completely before re-installing it.

## SECTION VIII UTILIZING THE KAM SYSTEM

In contrast to conventional air conditioners, which circulate air conditioning capacity evenly to an entire floor, KwiKool KAM Systems are designed for spot cooling of a worker or remote appliance. The Cold Air supply must be within five feet of the person or equipment being cooled, since the hot ambient air will mix with the cool air very quickly.

The KAM will supply air that is 17 to 20 degrees cooler than the air it is returning. It is important to be sure the system is placed in a well ventilated space for fresh air return with as little heat load as possible for best results. Call 1-800-KWIKOOL (1-800-594-5665) for help or for questions about other applications.

## SECTION IX AUDIBLE ALARMS

The KwiKool KAM System alerts operators with an audible alarm and stops the system when there is a problem. A partial list of potential problems that would activate the audible alarm includes Condensate Tank Full, float switches not installed or installed incorrectly, and High Pressure detected in the mechanical system. The audible alarm is the same for these issues and operators need to be made aware of the corrective steps to take in each case. See the troubleshooting guide in SECTION X of this manual for further information.

## SECTION X KAM14 TROUBLESHOOTING GUIDE

Troubleshooting Table

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
Audible alarm fails to clear on start up or while operating.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.	Internal Condensate Tank is full.	Empty internal Tank. (See Section IV (System Operation), Paragraph C (Tank Operation)).
	Condensate float switch jack is not installed or not positioned correctly.	Unplug tank plug and reinstall to ensure good connections. System automatically resets when fault condition is corrected.
	Water level switch is engaged.	Confirm switch is in the Down position. Reposition and tighten float switch, if the fastener is loose.
Audible alarm is sounding during start up or while operating.	Mechanical system has detected high pressure. The High Pressure switch is tripped.	<p>High pressure is normally caused by reduced Condenser Air flow.</p> <ul style="list-style-type: none"> <li>• Check for restriction on Condenser Inlet.</li> <li>• Check for Condenser Air system ventilation (See Section VI (Application Requirements), NOTE).</li> <li>• Check Condenser motors and/or blowers for proper operation.</li> </ul> <p>Reset the High Pressure switch.</p> <p style="text-align: center;"><b>NOTE</b></p> <p><i>The High pressure switch is a manual reset type. To reset, press the button labeled <b>HP Reset</b>, located on the Condenser Make up Air Inlet panel on the back of the KAM14. The technician should detect a click when the switch resets.</i></p> <p>Call 1-800-KWIKOOL (1-800-594-5665) for assistance.</p>

FAULT	POSSIBLE CAUSE	POSSIBLE SOLUTION
System Switch is <b>ON</b> , but unit is not supplying conditioned air.	<ul style="list-style-type: none"> <li>System is in time out.</li> <li>System not in COOL mode.</li> <li>Switch is in FAN mode.</li> </ul>	Confirm rocker switch position. Wait at least 2.5 minutes for the time delay to elapse, then remove and restore power in accordance with Section IV (System Operations), Paragraph B (Unit Operation).  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.
System is <b>ON</b> in <b>COOL</b> but the compressor does not start.	Voltage drop below operating parameters. Excessive power cable added.	Confirm the integrity of the source power. Be sure the circuit is dedicated to the operation of the KAM only. Extension cord is not allowed on this system.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.
Power is supplied and switch is <b>ON</b> but nothing starts.	Low voltage circuit is not engaged.	Check source power breaker for incoming power.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.
Breaker trips on start up.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.	Incoming power is incorrect.	Verify the power meets the system specifications.
	Breaker is undersized or faulty.	Verify the breakers are within system specifications and working correctly. Consult with the electrician.
	Power cable is damaged.	Verify the power cable is undamaged and properly connected.
Supply Air flow is limited, and/or water is dripping from the system.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.	No supply duct is installed.	Verify that Supply Air is not blocked and duct work is installed to specification. Remove or add duct as needed.
	Supply or Return Air is blocked or restricted.	Check air filter for blockage
	The Evaporator Coil is freezing.	Refer to Evaporator Coil troubleshooting entry below for further information.
Evaporator Coil is freezing and/or system has low performance.	<ul style="list-style-type: none"> <li>Low or restricted air flow.</li> <li>Low Return Air temp out of factory specs.</li> <li>Mechanical system malfunction.</li> </ul>	<ul style="list-style-type: none"> <li>Check for blocked air flow from the Supply Air.</li> <li>Turn the unit off to allow it to thaw. Put the unit in FAN mode to thaw faster.</li> <li>Clean air filters.</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 poor. Low voltage component is faulty.	Check for proper incoming voltage. Confirm power cable with plug attached is not damaged.  Call 1-800-KWIKOOL (1-800-594-5665) for assistance.

<b>FAULT</b>	<b>POSSIBLE CAUSE</b>	<b>POSSIBLE SOLUTION</b>
System is operating normally but water is dripping from around the condensate bottle compartment.	Condensate bottle cap is loose or cross threaded. Drain nipple is not lined up with the drain outlet.	Check integrity of cap seal. Position the bottle so water can flow into the drain nipple from the unit. Call 1-800-KWIKOOL (1-800-594-5665) for assistance.