



**INTREPID  
EP56 SERIES  
K2A6C30EP56TR/BR**

**K2A6C30EP56TR**

*with Serial Numbers J21A2011 and above*

**K2A6C30EP56BR**

*with Serial Numbers H21A1808 and above*

## ***Keep This Manual With Air Conditioner***

*Find additional information on this model at [kooltronic.com](http://kooltronic.com), or use the Technical Documents QR code below.*

*Technical  
Documents*



# **AIR CONDITIONER OPERATOR'S MANUAL**

### **CAUTION**

**BEFORE INSTALLING AND  
USING THIS AIR CONDITIONER,  
IT IS IMPORTANT THAT THIS  
MANUAL BE READ AND  
UNDERSTOOD THOROUGHLY**



**KOOLTRONIC, INC.**  
**30 Pennington-Hopewell Road**  
**Pennington, NJ 08534**  
**609•466-3400**  
**FAX: 609•466-1114**  
**[www.kooltronic.com](http://www.kooltronic.com)**

# ***TABLE OF CONTENTS***

		Page
I.	Introduction	2
II.	Incoming Inspection	3
III.	Product Handling	3
IV.	Product Identification and Nameplate	4
V.	Principles of Operation	5 - 8
VI.	Pre-Installation Testing	9
VII.	Specific Model Data	10 - 12
	Mounting	
	Drawings and Dimensions	
	Technical Data	
	Major Component Replacements	
	Standard Features	
VIII.	Maintenance	13 - 14
IX.	Trouble Shooting	14 - 15
X.	Warranty	16

**NOTE:** Wiring Schematics are available on the specific model page of the Kooltronic website.

## ***I. Introduction***

Kooltronic Air Conditioners are designed to provide a cool, dehumidified environment for your electronic components. There are models to fit virtually all sizes and shapes of electronics enclosures, in capacities ranging from 1,000 to 30,000 BTU/H. Our "closed-loop" design also ensures that your components will not be exposed to hot, dirty operating conditions.

This Manual provides you with the necessary general information for properly installing and operating standard Kooltronic Air Conditioners. Technical data and mounting instructions are presented on pages 10 through 12.

## ***II. Incoming Inspection***

Kooltronic Air Conditioners are designed, built and packaged to withstand the shock and vibration normally associated with shipment by common carriers. Occasionally improper handling during shipping causes damage. Such handling could include unbanding of palletized shipments, failing to respect "**This Side Up**" arrows, rough handling, falling off conveyors, excessive vibration, crushing, etc. Therefore, a thorough inspection should be done upon receipt of all shipments. Any carton tears, dents, scratches, loose articles or evidence of oil are signs of damage and should be noted on the Freight Bill. Cartons should be opened promptly and the units inspected for CONCEALED DAMAGE. Kooltronic Air Conditioners must be delivered in the proper mounting position to assure that damage to the compressor has not occurred during shipping. Any Kooltronic Air Conditioner that is delivered removed from the banded pallet, lying down or double stacked should be refused.

An immediate claim **MUST** be filed with the freight carrier and an inspection requested. Retain all packing materials. Kooltronic cannot assume responsibility for Consignee's failure to file a timely freight claim.

## ***III. Product Handling:***

- 1) Do not attempt to operate your Kooltronic Air Conditioner until you read and thoroughly understand this Manual. See section **VI PRE-INSTALLATION TESTING**.
- 2) Before operating the Kooltronic Air Conditioner be certain that it is placed in its correct mounting position. **This Air Conditioner is designed to operate in a vertical position only.** This placement must be done a minimum of 5 minutes prior to operating in order to allow the compressor oil to drain to the compressor sump area.

### ***CAUTION***

**Kooltronic Air Conditioners must be operated in their proper mounting position. If attempts are made to operate a unit that is not in its designed mounting position, permanent compressor damage will occur. This action will void the warranty. To avoid compressor damage do not tip the unit more than 45° from its proper mounting position.**



- 3) Before operating this unit, all electrical wiring must be checked to assure the proper connection to the correct power source. Minimum circuit ampacity should be at least 125% of the amperage found on the nameplate for the corresponding voltage. Do not exceed the maximum fuse size found on the nameplate.
- 4) We do not recommend that Air Conditioners be shipped to their final destination attached to an enclosure. In the event that the Air Conditioner needs to be shipped attached to an enclosure it is strongly recommended that proper support be provided for the Air Conditioner. Excessive vibration can occur if Air Conditioners are not properly supported when shipped on enclosures, increasing the potential for internal damage and voiding the warranty.
- 5) **PROCEDURE FOR PROPER PACKING AND SHIPMENT OF KOOLTRONIC AIR CONDITIONERS:**
  - Keep Air Conditioner in proper upright position indicated by arrow markers.
  - Pack Air Conditioner in an appropriate carton (preferably original carton if possible), with adequate internal protective packaging, making sure carton is marked and is kept in correct upright position.
  - For local, controlled transportation, strap carton to a secure part of truck to prevent falling or sliding, minimize vibration, etc.
  - For common carrier shipment, band unit(s) securely to a pallet. Unpalletted shipment risks severe damage which voids the warranty.


## IV. Product Identification and Nameplate

Each Kooltronic Air Conditioner includes an identification nameplate. This nameplate provides:

- ① Model Number
- ② Serial Number
- ③ Electrical power characteristics
- ④ Maximum and minimum ambient operating temperatures
- ⑤ Cooling capacity
- ⑥ Type and amount of refrigerant required for recharging
- ⑦ Design Pressure
- ⑧ Maximum Fuse Size
- ⑨ Manufacturing Order Number
- ⑩ Underwriters Laboratories Inc. Listed or Recognized Marks and NEMA ratings

We recommend you copy this information from your unit.

		Air Conditioner	
MODEL NUMBER ①		SERIAL NUMBER ②	
VOLTS ③	FREQ. ③	PH. ③	COOLING F.L.A. ③
		AMBIENT TEMP. MIN. °F ④    MAX. °F ④	
COOLING BTU ⑤		REFRIGERANT ⑥    Oz.	
DESIGN PRESSURE P.S.I.G. LOW ⑦    HIGH ⑦		MAX. FUSE SIZE ⑧	
		MFG. ORDER NO. ⑨	
		 ⑩	
<p><b>SPECIAL PURPOSE AIR CONDITIONER</b> NEMA/EEMAC/UL50 BY UNDERWRITERS LABORATORIES, INC. TYPE 3R &amp; 12 INTERFACE TO THE ELECTRICAL ENCLOSURE ONLY</p> <p><b>NEMA/EEMAC/UL50 BY UNDERWRITERS LABORATORIES, INC.</b> TYPE 1 SPECIAL PURPOSE AIR CONDITIONER EQUIPMENT COMPARTMENT ONLY OUTDOOR USE</p> <p>SERVICE AIR FILTER REGULARLY ALLOW 5 MIN. BEFORE RESTARTING AFTER SHUTDOWN UNAUTHORIZED SERVICE OR MODIFICATION VIOLATES WARRANTY ALL MOTORS ARE THERMALLY PROTECTED</p> <p><b>MANUFACTURED BY:</b> KOOLTRONIC, INC. PENNINGTON, NJ</p>			



①②⑨ When ordering parts, specify the Model Number, Serial Number & MFG. Order Number.

③ Before operating, be sure that the power source matches these requirements.

④ Make sure that these parameters are met. Failure to do so may result in permanent damage to the unit.

⑥ Use of incorrect type or amount of refrigerant will adversely affect performance and may damage the unit.



## V. Principles of Operation

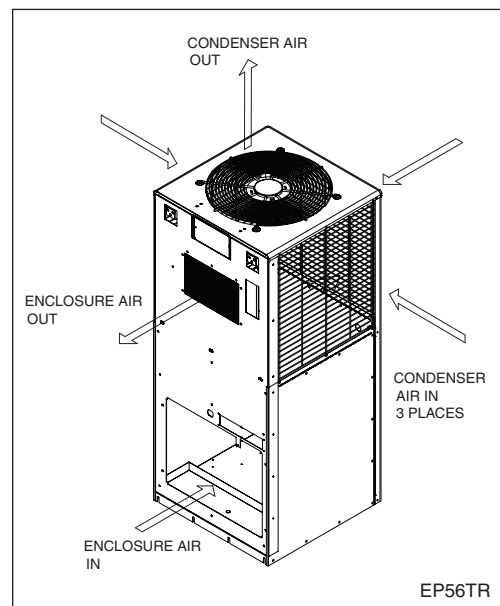
Kooltronic Air Conditioners are required when the equipment operating temperature must be kept near or lower than the ambient room temperature, and/or the cabinet must be sealed from dust, fumes, oil, corrosives and other contaminants. These Air Conditioners utilize a "Closed-Loop Cooling System" to ensure optimum performance of the installed components.

Closed-Loop cooling seals the electronic enclosure from hostile elements in the environment. Two separate circulation systems are employed. The internal system cools and dehumidifies the air inside the cabinet, totally isolating the sensitive electronics and other components from the environment. The external system uses circulating ambient air or water to discharge the heat removed from the electronics. The heat is dissipated from the enclosure by means of the vapor compression refrigeration cycle. This takes place in a hermetically-sealed refrigeration system, utilizing either an air-cooled or water-cooled condenser heat exchanger. The warm air inside the enclosure is drawn through the evaporator coil where it is cooled, dehumidified and returned.

Any enclosure moisture accumulated on the evaporator coil is collected in the condensate tray and removed through the drain tube to the condensate evaporator. Condensate evaporates in the condensate evaporator and is released to the ambient air by the condenser impeller.

The heat removed through the evaporator coil is transferred by the compressed refrigerant to the condenser coil. Ambient air is then passed through the condenser coil, where it absorbs the heat and is then discharged to the environment.

When the Kooltronic Air Conditioner is properly sized it should operate constantly and maintain 75°F to 115°F enclosure temperature, depending on the ambient temperatures.



### UNITS EQUIPPED WITH PROGRAMMABLE THERMOSTAT

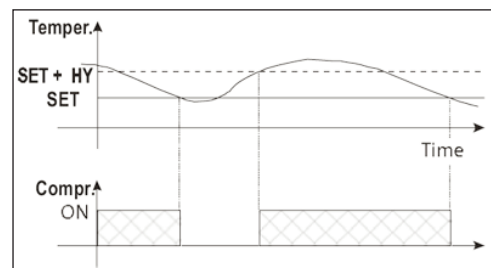
#### CONTROL ACTION

The evaporator blower operates continuously. The compressor is cycled on and off by the action from the factory preset programmable thermostat. A pressure switch controls the on/off action of the condenser blower.

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again.

In case of fault in the thermostat probe the start and stop of the compressor are timed through preset parameters.

The programmable thermostat is located as shown in the upper right ISO illustration. **WARNING:** the programmable device is preprogrammed and set at the factory. In the event changes are needed the following instructions can be used.



#### FRONT PANEL COMMANDS



#### KEY COMBINATIONS

- ▲ + ▼ To lock and unlock the keyboard.
- SET + ▲ To return to the room temperature display.
- SET + ▼ To enter programming mode.

**SET** - To display target set point; in programming mode it selects a parameter or confirms an operation.

▲ (UP) - To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.

▼ (DOWN) - To see the min. stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.

⏻ - To switch the instrument off, if onF = OFF.

☀ - Not enabled.

❄ (DEF) - To start a manual defrost.

#### FRONT PANEL LED INDICATORS

LED Functions		
LED	MODE	FUNCTION
❄	ON	Compressor enabled
❄	Flashing	Anti-short cycle delay enabled
⚠	ON	An alarm is occurring
❄	ON	Continuous cycle is running (not enabled)
☀	ON	Energy saving (not enabled)
°F	ON	Measurement unit
°F	Flashing	Programming phase

## ***Principles of Operation (con't)***

### **MAX AND MIN TEMPERATURE MEMORIZATION**

#### **HOW TO SEE THE MIN TEMPERATURE:**

- 1) Press and release the down arrow ▼ key.
- 2) The “Lo” message will be displayed followed by the minimum temperature recorded.
- 3) Press the down arrow ▼ key again or wait 5 seconds to restore normal display.

#### **HOW TO SEE THE MAX TEMPERATURE:**

- 1) Press and release the up ▲ arrow key.
- 2) The “Hi” message will be displayed followed by the maximum temperature recorded.
- 3) Press the up arrow ▲ key again or wait 5 seconds to restore normal display.

#### **HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED:**

- 1) Press the SET key for more than 3 seconds while the max or min temperature is displayed. (rSt message will be displayed.)
- 2) To confirm the operation, the “rSt” message starts blinking and the normal temperature will be displayed.

### **MAIN FUNCTIONS**

#### **HOW TO SEE THE SETPOINT:**

- 1) Press and immediately release the SET key. The display will show the set point value.
- 2) Press and immediately release the SET key, or wait 5 seconds to display the probe value again.

#### **HOW TO CHANGE THE SETPOINT:**

NOTE: The standard set point is 75°.

- 1) Press the SET key for more than 2 seconds to change the set point value.
- 2) The value of the set point will be displayed and the °C or °F LED starts blinking.
- 3) To change the set value push the up ▲ or down arrow ▼ keys within 10 seconds.
- 4) To store the new set point value push the SET key again, or wait 10 seconds.

#### **HOW TO CHANGE A PARAMETER VALUE:**

To change a parameter's value, operate as follows:

- 1) Enter the Programming mode by pressing the SET plus down arrow keys for 3 seconds (the °C or °F LED starts blinking).

- 2) Select the required parameter. Press the SET key to display its value.
- 3) Use up or down arrow keys to change its value.
- 4) Press SET to store the new value and move to the following parameter. To exit, press SET and the up arrow keys or wait 15 seconds without pressing a key.

NOTE: The set value is stored even when the procedure is exited by waiting for the time-out to expire.

#### **HOW TO LOCK THE KEYBOARD:**

- 1) Press and hold the up and down arrow keys simultaneously for more than 3 seconds.
- 2) The POF message will be displayed, and the keyboard will be locked. At this point, it will only be possible to see the set point or the MAX or MIN temperature stored.
- 3) If a key is pressed more than 3 seconds, the POF message will be displayed.

#### **HOW TO UNLOCK THE KEYBOARD:**

- 1) Press and hold the up and down arrow keys simultaneously for more than 3 seconds until the Pon message is displayed.

### **OPTIONAL MONITORING SYSTEM**

#### **TTL SERIAL LINE - FOR OPTIONAL MONITORING SYSTEMS:**

The optional TTL serial line, available through the HOT KEY connector, allows through the use of the external TTL/RS485 converter, connection of this digital converter to a monitoring system that is ModBUS-RTU compatible (X-WEB500/3000/300). Connections are provided through an external 2-position terminal block.

# Principles of Operation (con't)

## RESETTING

If it becomes necessary to reset the unit, the factory settings are as follows:

PARAMETER	DESCRIPTION	VALUE	UNIT	RANGE	
				MINIMUM	MAXIMUM
SEt	Set Point	75	°F	60	95
Hy	Differential	10	°F	1	45
dP4	Fourth probe display	0	--	--	--
dP3	Third probe display	0	--	--	--
dP2	Evaporator probe display	0	--	--	--
dP1	Room probe display	0	--	--	--
AFH	Differential for temperature alarm recovery	2	°F	1	45
ALL	Minimum temperature alarm	35	°F	-67	120
ALU	Maximum temperature alarm	120	°F	35	302
SHy	Differential for auxiliary relay	5	°F	1	45
SAA	Set point for auxiliary relay	115	°F	-67	302
ACH	Kind of action for auxiliary relay	CL	--	--	--
AC	Anti-short cycle delay	2	min	0	50
odS	Outputs delay at start up	0	min	0	255
P2P	Evaporator probe presence	n	--	--	--
ot	Thermostat probe calibration	0	°F	-21	21
US	Maximum set point	95	°F	75	302
LS	Minimum set point	60	°F	-67	75
Ptb	Map code	7	--	0	65535
rEL	Software release	0	--	--	--
rSE	Real set point	0	--	--	--
onF	on/off key enabling	ES	--	--	--
PbC	Kind of probe	ntc	--	--	--
Adr	Serial address	1	--	1	247
HES	Differential for energy saving	0	°F	-54	54
rrd	Regulation restart with door open alarm	y	--	--	--
odc	Compress status when open door	no	--	--	--
nPS	Number of activation of pressure switch	15	--	0	15
did	Digital input alarm delay	5	min	0	255
i1F	Digital input configuration	EAL	--	--	--
i1P	Digital input polarity	cL	--	--	--
dAO	Delay of temperature alarm at startup	00:00	h	--	--
ALd	Temperature alarm delay	0	min	0	255
ALc	Temperature alarms configuration	Ab	--	--	--
ArP	Probe selection for auxiliary alarm	P1	--	--	--
dLy	Display temperature alarm	00:00	min.	0	20
Lod	Probe displayed	P1	--	--	--
rES	Resolution	in	--	--	--
CF	Temperature measurement unit	F	--	--	--
CH	Kind of action: heating cooling	cL	--	--	--
COF	Compressor OFF time with faulty probe	4	min	0	255
COOn	Compressor ON time with faulty probe	20	min	0	255
O4	Fourth probe calibration	0	°F	-21	21
P4P	Fourth probe presence	n	--	--	--
O3	Third probe calibration	0	°F	-21	21
P3P	Third probe presence	n	--	--	--
OE	Evaporator probe calibration	0	°F	-21	21

## ***VI. Pre-Installation Testing***

Before mounting the air conditioner to the enclosure, test for proper operation. This will verify the shipping integrity of the system. Please follow the steps below prior to installation.

### ***CAUTION***

**The air conditioner must be standing in its proper mounting position for a minimum of five (5) minutes prior to testing. Failure to follow this procedure will cause permanent damage to the compressor. To avoid compressor damage do not tip the unit more than 45° from its proper mounting position.**

1. The unit must sit in an upright position at a minimum room temperature of 65°F to allow the system to warm-up. This is particularly important during winter months.
2. Refer to the nameplate for proper electrical voltage and current requirements. Connect the power cord to a properly grounded and fused electrical supply, leaving electrical power to the unit turned off.
3. Note the factory thermostat setting which is 70°F.
4. Turn the electrical power on.
5. Verify that the evaporator blower or fan is running.
6. Verify that the condenser blower or fan is running.
7. Observe the temperature on the digital display. The thermostat must be set a minimum of 10°F below this temperature for the compressor to operate (the factory setting is 75°F). Refer to page 6 for instructions on adjustment of the thermostat.
8. Operate the air conditioner for approximately ten (10) minutes. During this period no unusual noise or vibration should be evident. Both the evaporator and condenser fans or blowers should be delivering air through their respective discharge ports. The cool air discharged should be less than 70°F when the room temperature is between 70°F and 80°F. It is normal for the condenser blower to cycle on/off during this period.
9. Turn off the electrical power and disconnect the air conditioner from the power source.
10. If a cover plug was removed to adjust the unit, be sure to replace it in order to maintain the integrity of the closed-loop airflow system.

**NOTE:** Before shipment all Kooltronic Air Conditioners are subjected to a performance test.

## ***VII. Specific Model Data***

### ***Mounting***

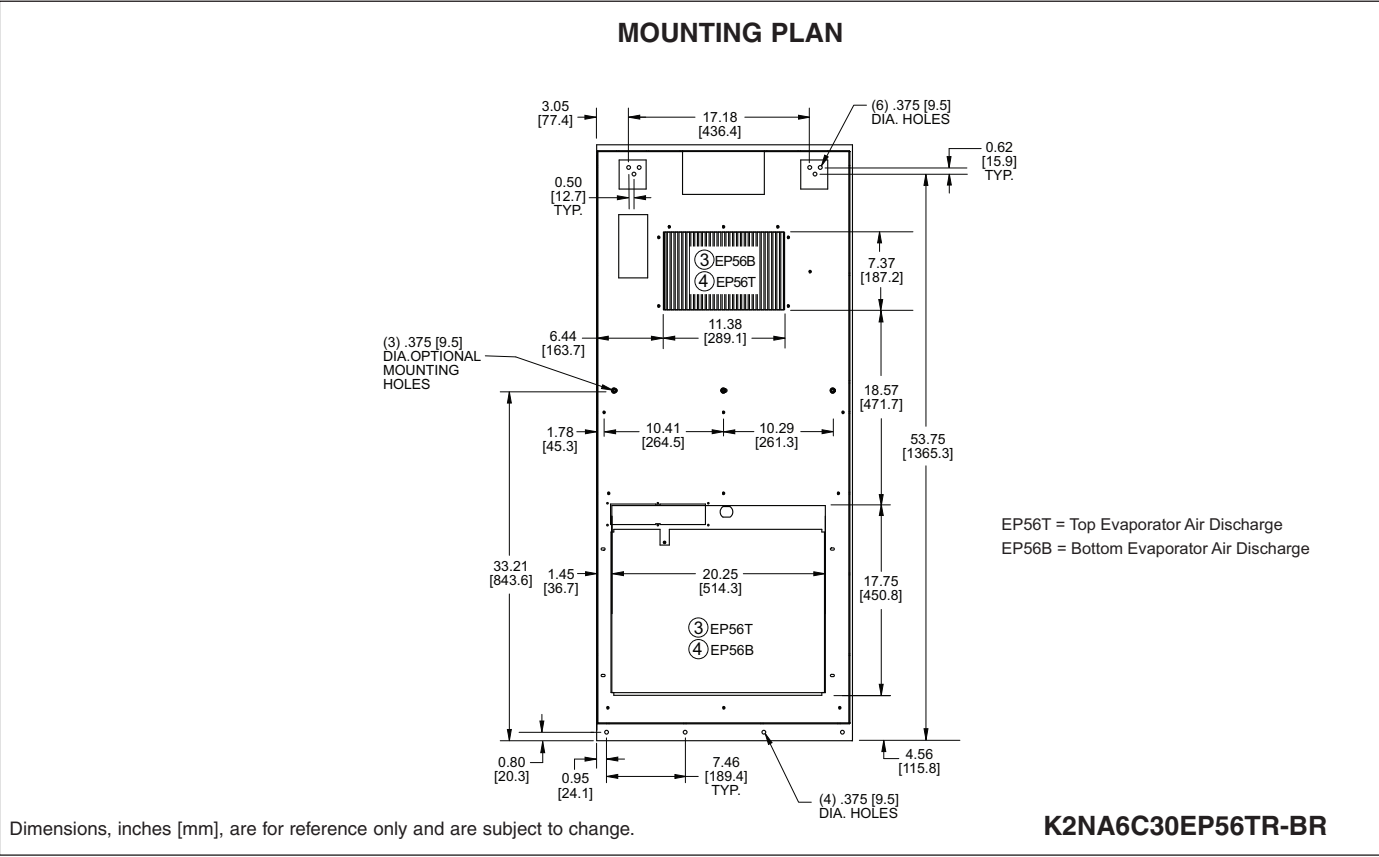
The Kooltronic Special Purpose Air Conditioners K2NA6C30EP56TR-BR have been engineered to be installed easily. Prior to mounting, refer to pages 10 and 11 for the drawings showing dimensions and locations of mounting holes and cutouts. Prior to cutting or drilling, make sure that cutouts and mounting holes do not interfere with components inside the cabinet. To avoid damaging your air conditioner, please read the following information before installation:

1. It is recommended that a lift truck be used for installation
2. Attach two hooks to your enclosure with supplied hardware
3. Route the power cord through the bottom cutout in your enclosure. It is recommended that a lift truck be used to mount the air conditioner. Hang the air conditioner on the hooks. Before the lift truck lowers the air conditioner make sure that the hooks are located inside of the small cutouts on the front panel.
4. Tighten the air conditioner bottom flange to your enclosure with supplied hardware (see mounting drawing).
5. If the mounting panel of your enclosure is not stiff enough (moment inertia is less than 0.005"⁴) it is recommended that the three additional supplied screws be used at approximately the middle of the unit height for proper gasket compression. The screws must be started from inside your enclosure.
6. Attach the supplied drain hose to the drain tubing on the bottom of the air conditioner using the plastic clamp.

### ***CAUTION***

**If the air conditioner is mounted to the cabinet door you must be sure that the door hinges will support the additional weight of the air conditioner. Also be certain that when the door is opened fully, the cabinet does not become unbalanced. The actual weight of the unit can be found in the Technical Data on page 12.**

Drawings and Dimensions

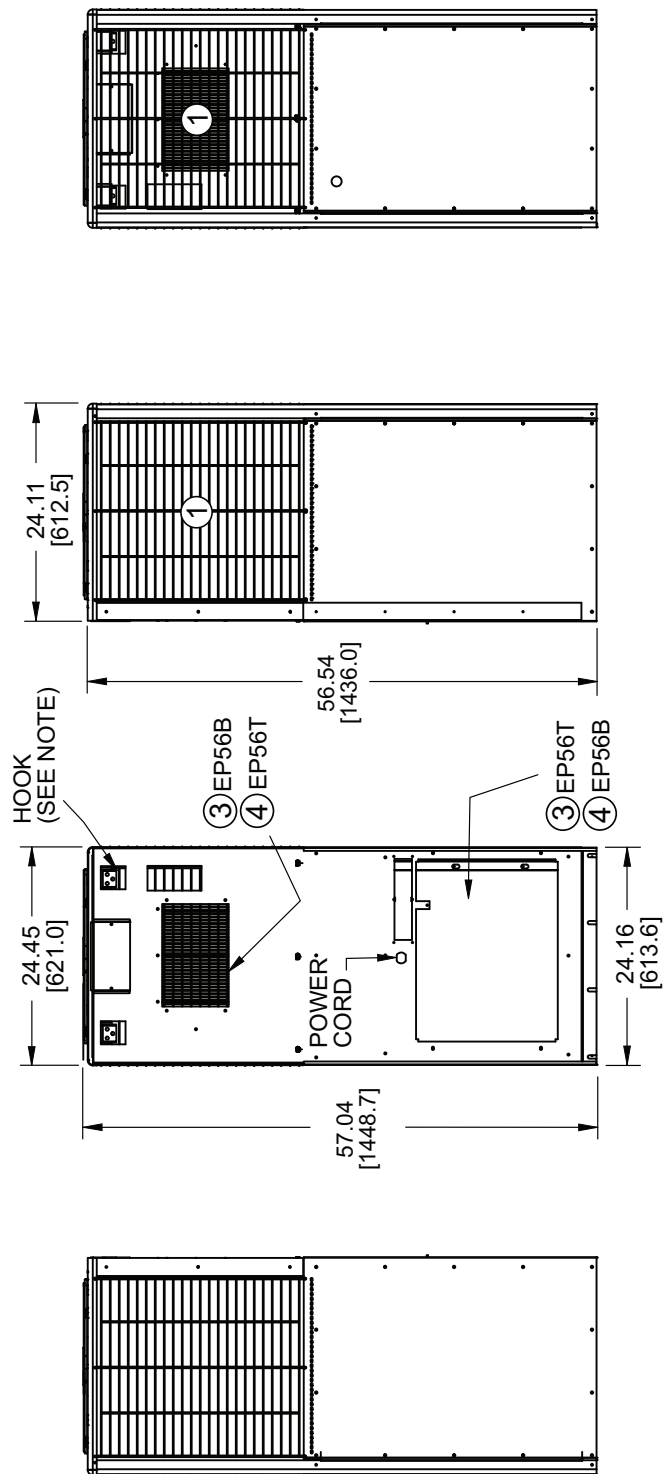
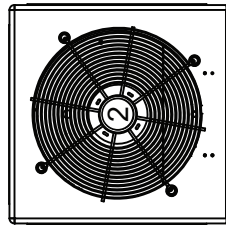




## ***Drawings and Dimensions***

**K2A6C30EP56TR-BR**

- ① CONDENSER AIR INLET  
(Ambient Air In)
- ② CONDENSER OUTLET  
(Warm Ambient Air Out)
- ③ WARM AIR RETURN FROM  
ENCLOSURE
- ④ COOL AIR OUTLET  
TO ENCLOSURE



DRAIN

**NOTE:**  
HOOKS ARE SHOWN MOUNTED  
ON CUSTOMER ENCLOSURE

Dimensions, inches [mm], are for reference only and are subject to change.

## Technical Data

Model	BTU/H Rating	95/95 Rating BTU/H	Ambient Temp. °F Max./Min.	Volts	Hz	Cooling Amps	Heating Amps	Approx. Weight (lbs)
K2A6C30EP56TR	30000/24000	28000/22000	131/0	230	60/50	25.5/25.2	15.3	302
K2A6C30EP56BR	30000/24000	28000/22000	131/0	230	60/50	25.5/25.2	15.3	304

## Major Component Replacements

Part	K2A6C30EP56_R Part Number
Compressor	0665-425
Compressor Capacitor	0452111
Condenser Blower Motor	0261-274
Condenser Blower Capacitor	0452-04
Evaporator Blower Motor	0261-275
Evaporator Coil	0667-51
Condenser Coil	0666-59-01
Thermostat	0750-137

NOTE: Part Numbers shown are for 60Hz/1Ø. For 50Hz consult Kooltronic.

## Standard Features

Available in either top or bottom evaporator  
air discharge models  
Baked Powder Finish  
Closed-Loop Cooling  
Compressor Short Cycle Protector  
Condenser Blower Controller  
Crankcase Compressor Heater  
Heavy-duty Steel Shell  
Internal Corrosion Protection  
Programmable Temperature Alarm  
Programmable Thermostat  
NEMA 3R, 12 & 1 Ratings Maintained (UL50)  
Six-Foot [1.8m] (minimum) 3-Wire Power Cord  
Tamper-resistant hardware  
UL Recognized  
Zero ODP Refrigerant

## Accessories and Options

Enclosure Heater  
Filter Recoating Adhesive  
Remote Monitoring  
Remote Thermostat Relay  
Replacement Filters  
Special materials or finishes  
Special motors, line cords or connectors  
Temperature Alarm

## ***VIII. Maintenance***

Kooltronic Air-Cooled Air Conditioners require routine cleaning of the condenser coil and the air filters to assure unimpeded airflow through the condenser heat exchanger. It is not possible to recommend specific condenser coil or filter cleaning intervals, since the level and the nature of airborne particulate matter differs widely with each installation. It is generally sufficient to clean the condenser coil and/or the aluminum mesh filter when the outer surfaces appear covered with a thin layer of dust, lint or other foreign matter. The condenser coil can be washed or blown out with air, depending on the foreign matter involved (see below - **Filter and condenser coil service**). The aluminum mesh filter can be washed with warm water. Appropriate disposable replacement filters are available from Kooltronic.

If routine condenser coil or filter service is neglected or delayed, the air conditioner will not perform at its design capacity. The first indication of an excessively clogged condenser coil or air filter is usually a gradual increase of temperature within the equipment cabinet. If operation is continued under these conditions, the compressor will be shut off by the thermal overload device. The compressor will restart when its external temperature drops below the protector threshold setting and the compressor will continue to cycle on and off. Continued operation under these conditions will cause damage, shorten compressor life and void the warranty.

### **A. Filter and condenser coil service**

The rear panel must be removed in order to clean the filters. After removal, the filters should be flushed under warm running water with clean side up. If the accumulated dirt is oily, washing in a detergent bath is recommended, followed by a warm water wash as above.

The exposed condenser coil must be cleaned by pressurized air or pressurized cleaning solution. Dirty liquid will be removed through the condenser coil drain pan.

### **B. Blowers**

The design life of the blowers used in all Kooltronic Air Conditioners is substantially in excess of 20,000 hours. All Kooltronic condenser and evaporator blowers are equipped with automatic-reset thermal overload protectors.

## ***CAUTION***

<b>Before opening the air conditioner, disconnect all power.</b>
--

If field replacement of a blower motor is necessary, most blower assemblies, including the mounting plate, are readily removable. Each of the blower mounting plates is held to the air conditioner cabinet structure by screws and nuts. For installation of the replacement blower, electrical connections may be broken at the terminal block, or power leads may be cut and appropriately spliced together.

### **C. Compressor**

All Kooltronic compressors are approved by UL and CSA, and require no maintenance. They are hermetically sealed and charged at the factory, and equipped with automatic-reset thermal overload protectors.

If the compressor fails, it is strongly recommended that the air conditioner be returned to Kooltronic for service.

## D. Refrigerant Loss

Kooltronic Air Conditioners are subjected to a series of tests to detect refrigerant leaks, during and after manufacture. It is possible that shipping or other damage, or microscopic leaks over a long period, may result in the need for replenishment of refrigerant charge. **When it has been verified by a Certified EPA Technician that a refrigerant shortage does exist, the leak must be repaired. Then the unit may be evacuated and recharged in the field by a Certified EPA Technician only.**

### CAUTION

**Refer to the data on the unit nameplate which specifies the type of refrigerant and the amount of charge in ounces.**

## E. Relocation

If your Kooltronic Air Conditioner has to be moved to another location by truck, the following precautions should be taken:

- De-mount the air conditioner from the equipment, controller or enclosure.
- Conform to the applicable provisions of PROCEDURE FOR PROPER PACKING AND SHIPMENT OF KOOLTRONIC AIR CONDITIONERS in this manual under *Section III. "PRODUCT HANDLING"*.

## IX. Trouble-Shooting

Each Kooltronic Air Conditioner is engineered for performance and built for reliability. They are designed to require only routine maintenance. If your air conditioner should require warranty service, please contact Kooltronic. If you require service out of warranty, we have compiled a trouble-shooting chart to assist your service personnel. If additional assistance is required contact Kooltronic at (609) 466-3400.

Problem	Cause	Solution
Unit does not run.	No Power.	Check Power Source and electrical connection. Check unit ON-OFF switch (UL Listed units only). Check unit power cord connection to terminal block.
After initial 15 minute energization of air conditioner, compressor and condenser fan do not run.	Return temperature is between Thermostat set point and differential (75°F to 86°F).	Normal Operation. Check return air temperature. Check sensor connection on Thermostat.
Unit not cooling. (Temperature difference between return and supply air is less than 10°F). Evaporator Blower is running. Compressor and Condenser Blower do not run. Return temperature is above set point plus differential (90°F).	Failed Thermostat or Relay.  Low Line Voltage.  Failed Compressor.	Check Thermostat and Relay wire connections. Replace Thermostat or Relay.  Check Nameplate Voltage against supply Voltage.  Check Compressor wire connections. Check Compressor overload. Check Compressor Capacitor. Replace Compressor.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Unit not cooling. (Temperature difference between return and supply air is less than 10°F).</b> Compressor and Condenser Blower are running. Evaporator Blower does not run.	Failed Evaporator Blower.	Check Blower wire connections. Check Blower Capacitor. Replace Evaporator Blower.
<b>Unit not cooling. (Temperature difference between return and supply air is less than 10°F).</b> Compressor and Evaporator Blower are running. Condenser Blower does not run.	Low Refrigerant charge. Failed Condenser Blower.  Failed Condenser Blower Thermostat or Sensor.	Check discharge and suction pressure for Refrigerant leak. Check Blower wire connections. Check Blower Capacitor. Replace Condenser Blower.  Replace Condenser Blower Thermostat Replace Sensor
<b>Unit not cooling. (Temperature difference between return and supply air is less than 10°F).</b> Evaporator Blower, Condenser Blower and Compressor are running.	Condenser or Evaporator Coil clogged.  Loss of Refrigerant.  Ice on Evaporator Coil.  Excessive condensate draining and loss of A/C sensible cooling performance.	Clean Coil.  Locate and repair leak.  Clean Evaporator Coil. Check discharge and suction pressure for Refrigerant leak. Check for any obstruction of Evaporator airflow. Check and seal all openings. Eliminate the frequency of door openings.
<b>Unit overcooling.</b> Evaporator Blower, Condenser Blower and Compressor are running.	Failed Thermostat. Failed Relay.	Check Thermostat wire connections. Replace Thermostat. Replace Relay.
<b>Compressor cycling more than 10 cycles per hour.</b>	Short circuiting of air between A/C discharge and inlet openings.	Provide baffle in the enclosure separating A/C. outlet and inlet.
<b>Excess vibration.</b>	Defective motor in Blower.  Defective wheel in Blower.  Bad Compressor.	Replace motor.  Replace wheel.  Replace Compressor.

