S U P P L Y I N G C L E A N A I R T O I N D U S T R Y

M O D E L X J - 2

Isolation Room Air Cleaner

Installation and Operation Manual

Affordable, portable, compact, and quiet, the new XJ-2 assists you in complying with the CDC guidelines for converting ordinary patient care rooms into negative-pressure isolation rooms.

AIR QUALITY ENGINEERING

Tailored solutions from people who care

Before you get started please review the following:

Purchase Date: _____

Serial Number: _____

Motor Spec: _____

Type of filter and AQE P/N: _____

Customer Technical Support:

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Disclaimer
All statements, technical information and recommendations in this manual or related documents are believed reliable, but the accuracy and completeness thereof are not guaranteed or warranted, and they are not intended to be, nor should they be understood to be representation or warranties concerning the products described.

Specifications are subject to change without notice.

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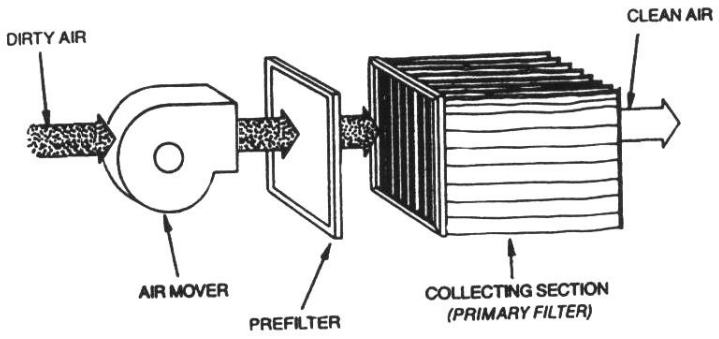
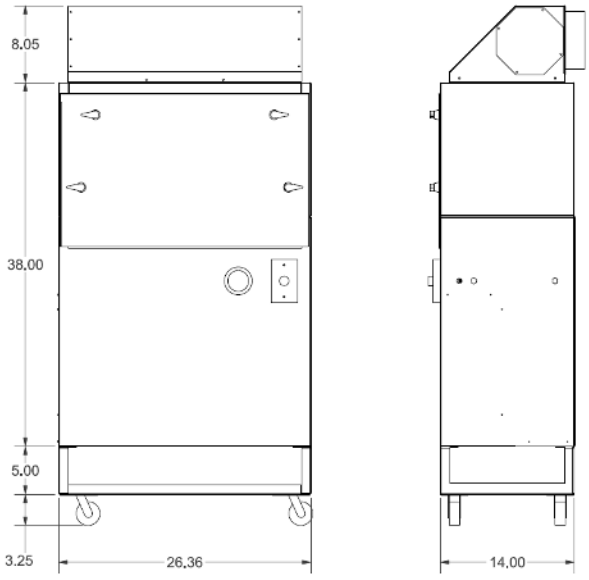
HOW AIRBORNE CONTAMINATION IS REMOVED

Dirty air passes through the prefilter. The prefilter removes large particulate, such as lint. The primary filter then captures the remaining smaller particulate. As the contaminant load on the filters increases, the filters become more efficient in capturing the smaller particles. At the same time, however, the dirty filter allows less particle collection and a decrease in the overall effectiveness of the air cleaner.



DIMENSIONS



SPECIFICATIONS

- IMPORTANT -

THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.

SPECIFICATIONS

Dimensions & Weight:	52" H x 26.5" W x 14" D x 140 lbs.
Air Flow Capability:	Adjustable from 115 CFM to 1000 CFM
Pre-filter:	80-85% ASHRAE efficient
Microbial filter:	HEPA (99.97% DOP efficient at 0.3 microns)
Filter Pressure Gauge:	Mini-Helic® 0" to 5" range
Power Requirements:	120Vac, 60 Hz, 5.1 Amps
Sound Levels:	35 dBA @ 115 CFM and 66 dBA @ 775 CFM (tested 4' from unit)
Cabinet:	Heavy-gauge, welded steel cabinet with white finish.
Base:	Standard base includes four swivel casters.
Listings:	ETL Listed to UL 507, CARB Certified (120Vac Only)
	MEETS CALIFORNIA OZONE EMISSIONS LIMIT: CARB CERTIFIED

Air Quality Engineering, Inc., has a policy of continuing product improvement and reserves the right to make changes in design and specifications without notice.

PLANNING THE INSTALLATION

- WARNING -

The XJ-2 ambient media air cleaner is not explosion-proof. It must not be installed where there is danger of vapor, gas or dust explosion.

INTRODUCTION

Clean air is the subject of numerous laws and regulations. Typical requirements in the United States are those put out by the Occupational Safety and Health Administration (OSHA). Private groups, such as the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), have also published numerous recommendations.

The health care industry is regulated by the Center for Disease Control (CDC). The CDC has many regulations regarding air cleaning, some of which are covered next.

Normally, clean air is defined in regulations and recommendations as air having a limited amount of contaminant, commonly expressed as parts per million milligrams per cubic meter. Approved counteractions are intended to lower or eliminate the amount of contaminants in the air. One of the more common methods of achieving this goal is through the use of media air cleaners.

CDC Guidelines

The air change rate shall be not less than 12 ACH. The purpose is to reduce the concentration of contaminants in the air by removing contaminated air and replacing it with contamination-free air. The amount of contamination-free air is an air-change rate expressed in ACH (air changes per hour.)

Air shall generally flow from the supply to the Health Care Worker to the patient (or other infectious source) to the exhaust.

The objectives are to avoid short-circuiting of fresh air from supply to exhaust, to avoid stagnation of air and consequent build-up of contaminant concentration, and to avoid the Health Care

Worker being positioned between the infectious source and the exhaust.

Room pressurization shall be negative for Infectious Isolation Rooms. Provision shall be made for daily monitoring of the pressurization. (Optional) An audible alarm to indicate loss of room pressure control shall be provided.

Air flows from areas of higher pressure to areas of lower pressure. Thus negative pressurization of isolation rooms is desired so that air flows into the room from adjacent rooms and not from the potentially contaminated isolation room into adjacent rooms.

CDC Guidelines specify negative, monitored pressure, but do not specify well what the pressure should be. A minimum of 0.25 Pa (0.001 IN WG) is stated as the requirement for control of airflow direction. However such low pressures are very difficult to monitor conveniently.

Exhaust air shall be recirculated or discharged via HEPA filters. Or exhaust air shall be exhausted directly to outside via negatively pressurized ducting, away from air-intake vents, persons and animals or recirculated or discharged via HEPA filters.

Provision shall be made for monitoring (pressure differential), testing (integrity) and safe change of HEPA filters. Provision shall be made to automatically or manually adjust airflow to compensate for HEPA filter loading.

The purpose of HEPA filtration is to remove contaminants from the air. HEPA filters remove at least 99.97% of all particles greater than 0.3 microns in diameter. CDC Guidelines state that Mycobacterium tuberculosis droplet nuclei probably range from 1 micron to 5 microns in diameter, therefore HEPA filters can be expected to remove infectious droplet nuclei from contaminated air.

CDC Guidelines recommend that openings including windows and electrical and plumbing entries shall be sealed as much as possible. Water supplied to isolation rooms shall be fitted with back flow prevention.

ROOM PREPARATION:
There are many rules to follow for the installation of the XJ-2 into a hospital setting. Information on these rules can be found at www.cdc.gov, local building regulations, hospital rules.

For the installation of the XJ-2: find a good location for the unit so air circulates in the following fashion. From the air cleaner to hospital personnel to infected patients to the air cleaner. The XJ-2 operates off 120Vac \ 240Vac 50 \ 60 Hz.

For the room pressure monitor: Source a room pressure monitor and following the instructions provided with the room pressure monitor

ASSEMBLY

- CAUTION -

Do NOT connect the power source until after the air cleaner is completely assembled.

If the air cleaner must be turned on for an electrical check, be extremely careful in avoiding electrical shock. Also, take care to avoid the air cleaner's moving parts.

WHEN ASSEMBLING THIS PRODUCT

Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.

Check the electrical ratings given on the air cleaner schematic to the power source to insure compatibility.

UNPACKING
The carton should be positioned on the floor with the "up" arrows properly orientated. Remove all shipping cardboard and banding. Be sure to

inspect the packaging material before discarding it. After unpacking is complete, check out the product operation as provided in these instructions.

WIRING
The XJ-2 has no special wiring requirements. It comes equipped with a 10-foot power cord and plug. The power source must be compatible with the voltage and frequency of the XJ-2. Route the power cord so that it is out of the way of the building's occupants. Do not use an extension cord.

CONNECTING DUCTING
Connect any applicable ductwork to the unit and check and double check that there are no leaks throughout the system.

CHECKOUT AND OPERATION

CHECKOUT
Before operating the XJ-2, check out the installation using the following procedures:

1. Make sure the air cleaner is oriented for good air circulation where it will not interfere with personnel traffic. Make sure the unit will be able to create an airflow as described by the CDC guidelines.

2. Make sure the prefilter and the primary filter are properly oriented and the airflow arrows are pointing away from the blower.

3. Make sure quarter turn fasteners on filter access cover are secure.

4. Make sure the minihelic® installed on unit is at zero inches of water. If not, reference calibration of the minihelic. The needle should move when the unit is turned on.

OPERATION
Turn on the air cleaner control switch. Make sure the blower is providing a strong air discharge.

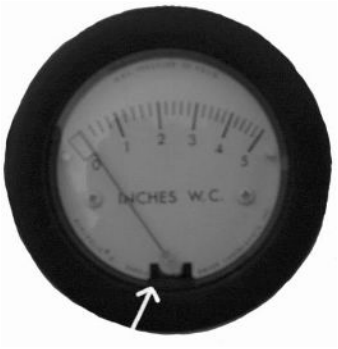
2. The filter gauge should be level and should read zero when the XJ-2 is turned off.

CALIBRATION OF THE MINIHELIC

Step 1
Remove the plastic cover by turning it counter-clockwise. One may have to press on the cover as one is turning it.

Step 2
With the supplied hex wrench, one can adjust the needle by turning the hex screw at the bottom of the gauge.

MAINTENANCE



- CAUTION -

Always disconnect the power to the XJ-2 before working on or near the air cleaner.

Dirty air passes through the prefilter. The prefilter removes large particulate. The primary filter then captures the remaining particulate.

As the contaminant load on the filters increases, the filters become more efficient in capturing the smaller particles. At the same time, however, the dirty filter allows less air to pass through resulting

in less particle collection and a decrease in the overall effectiveness of the air cleaner.
The XJ-2 air cleaner is equipped with a pressure gauge which indicates the restriction to airflow caused by the filters loading with particulate. When a noticeable reduction in airflow occurs make note what the pressure gauge is reading as this is will be considered the pressure reading when you will need to replace filters. When you no longer have enough airflow it is time to replace the prefilter and possibly the primary filter. The CDC guidelines specify that the HEPA filter shall be replaced every six months.

NOTE: An increase of one inch on the gauge would be approximately a 25% decrease in airflow. If the reduction in airflow is not a problem, the air cleaner can be operated beyond this point.

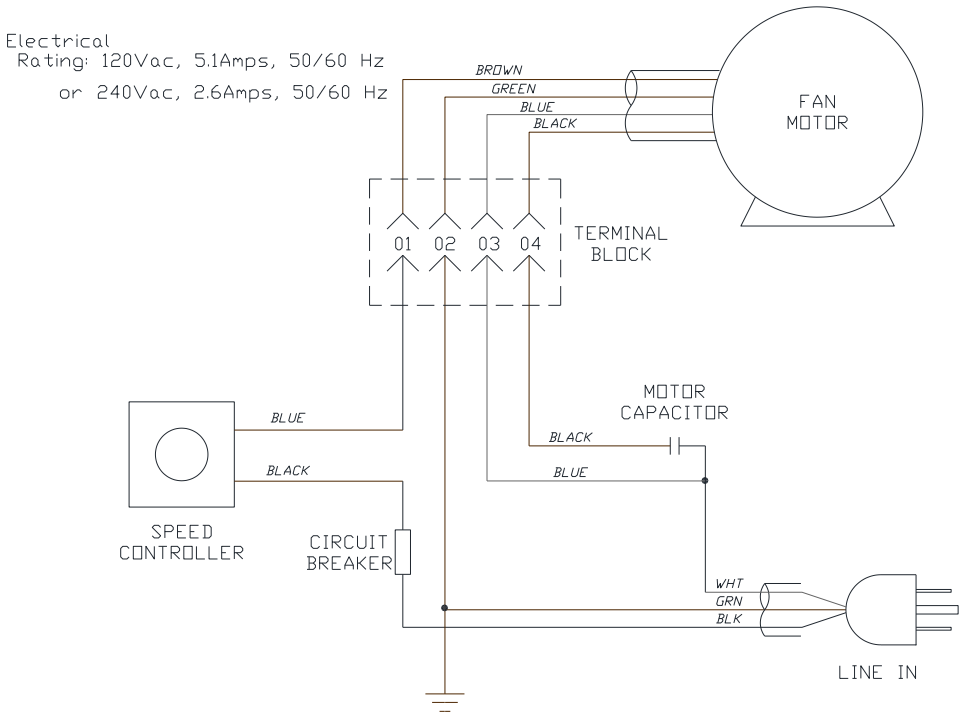
FILTER MAINTENANCE/REPLACEMENT
The CDC has set up guidelines for the proper replacement of a filter exposed to harmful contaminants. Follow those guidelines as you replace the filters.

Step 1
Turn off the air cleaner. Open up the filter access door and slide out the prefilter.

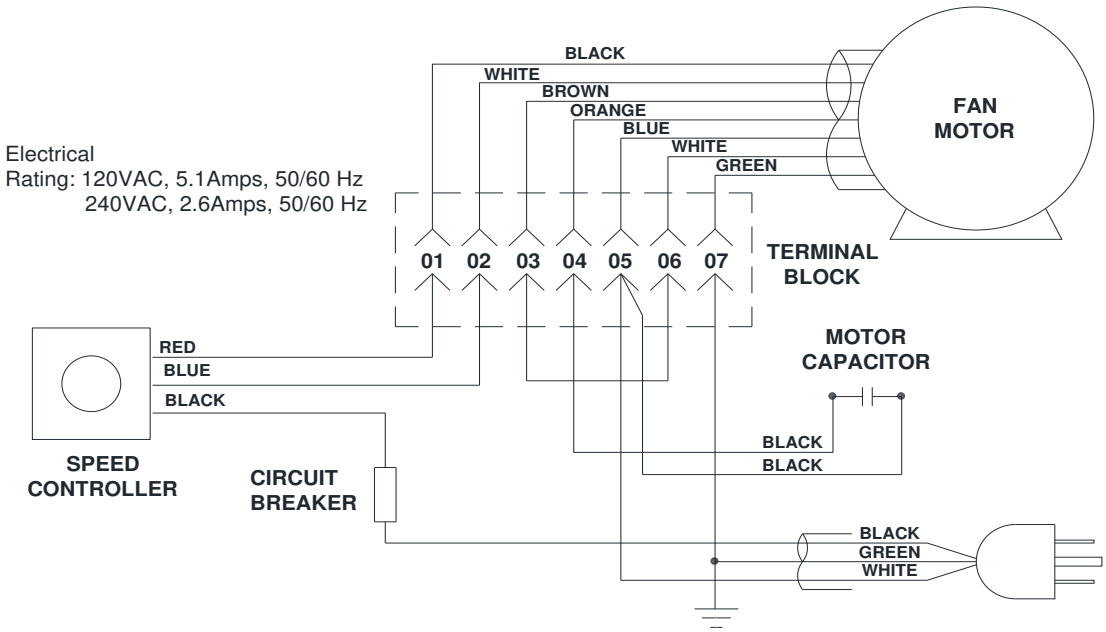
Step 2
Replace the prefilter and turn on the air cleaner. The reading on the air filter gauge should be lower than previous. If no performance improvement is evident after cleaning or replacing the prefilter, the primary filter will have to be replaced. In most cases, the prefilter can be replaced several times before the primary filter will need to be replaced.

Step 3
Release the tension screws holding in the HEPA filter. The filter then can be removed by sliding it out along the tracks. A new primary filter can be replaced with the process reversed.
Dispose of the filter following local, state and Federal regulations.

ELECTRICAL SCHEMATICS

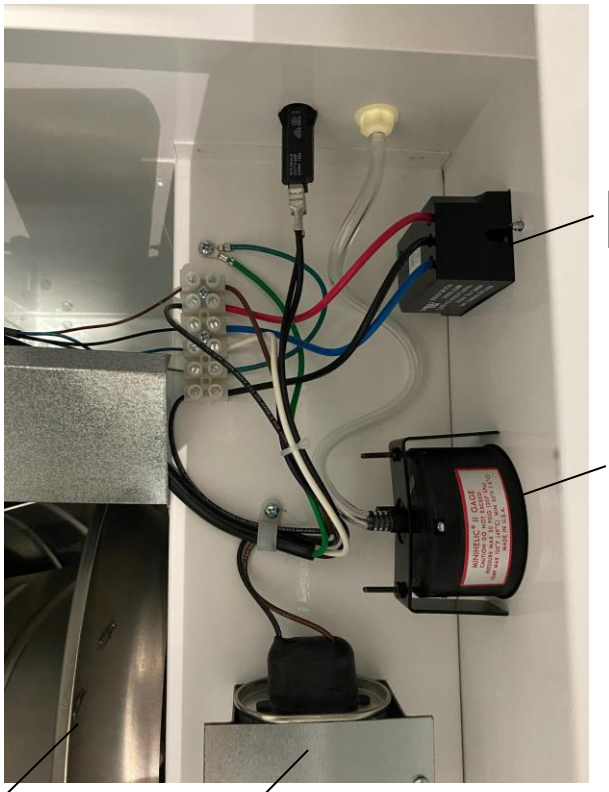


Single Phase Schematic (4 Wire Fan Motor)



Single Phase Schematic (7 Wire Fan Motor)

PARTS IMAGES



WARNING

To Reduce the Risk of Fire, Electric Shock or Injury to Persons, Do Not Use Replacement Parts That Have Not Been Recommended by The Manufacturer (e.g. Parts Made At Home Using A 3D Printer)

PARTS LIST

NO.	DESCRIPTION	PART NO.
1	Speed controller 120V	10251
	Speed controller 240V	10253
2	MiniHelic® 5”	10219
3	Motor / Impeller Kit 120V	07430
	Motor / Impeller Kit 240V	07431
4	Prefilter	41144
5	HEPA Filter	41142
6*	6 µf	40121
	8 µf	40132
	10 µf	40103
	30 µf	40131
	40 µf	40119
7	Wall mounting kit (not shown)	07130
8	Security Cover (not shown)	07131

*Make sure to check capacitor value before ordering.

TROUBLESHOOTING

WARNING!

The following instructions are intended for qualified service personnel only. Dangerous line voltage circuits are exposed during this procedure. Disconnect the power before servicing the unit.

Make sure to follow all CDC guidelines for cleaning the unit whenever you open any access panel on the XJ-2

Check the Fan Motor and Power Source

If the fan does not run when the switch is on check the voltage supplied to the motor.

If the correct line voltage is not measured, check back through the wiring to the power source.

If the motor does not turn with the correct voltage applied, check to see that the shaft is free to turn.
Replace the motor, if necessary.

If the fan is noisy when the unit is in operation check the fan.
WARNING: Disconnect power before continuing! Manually turn the fan to make sure there is no rubbing or grinding

CERTIFICATE OF WARRANTY

THREE-YEAR LIMITED WARRANTY

Air Quality Engineering, Inc. (AQE), warrants to the original purchaser, subject to the conditions below, that if the "Product" covered by this warranty should fail to perform by reason of improper workmanship or material, AQE will during the period of three (3) years from the date of original purchase either (i) replace the product or (ii) provide all necessary parts to repair the product without charge. The decision to replace the product or the necessary parts shall rest solely with AQE. This three-year limited warranty does not apply to main filter elements. AQE will replace without charge the main filter elements during the period of thirty (30) days from the date of original purchase if the main filter elements fail to perform by reason of improper workmanship or material. This warranty is valid only under the following conditions:

CONDITIONS

1. AUTHORIZATION: The purchaser will contact AQE at (763) 531-9823 for authorization, returned goods number (RGA) and the shipping address. AQE will direct the purchaser to either return the necessary parts or the product at AQE's option.

2. PROPER DELIVERY: The shipping, freight prepaid or delivery of the parts or the product to AQE in either its original carton or in a carton assuring similar protection of the product with the returned goods number (RGA) clearly displayed on the outside of the carton.

3. UNAUTHORIZED REPAIR: A showing by the original purchaser that the product has not been altered, repaired or serviced by anyone other than an authorized service technician using genuine AQE parts.

4. UNAUTHORIZED PARTS: A showing by the original purchaser that the product has had only genuine AQE parts and filters used in its operation and maintenance.

5. SERIAL NUMBER INTACT: A showing by the original purchaser that the serial number has not been altered or removed.

6. MISUSE: A showing by the original purchaser that the product has not been involved in an accident, freight damaged, misused, abused or operated contrary to the instructions contained in the Owner's Manual.

Air Quality Engineering, Inc.'s, sole responsibility shall be to repair or replace the product within the terms stated above. AQE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED, APPLICABLE TO THIS PRODUCT. Some states do not allow the exclusion or limitation of consequential damages so this limitation may not apply to you.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED BEYOND THE THREE-YEAR DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts so the above limitation may not apply to you.

This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

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MANUFACTURER & WORLDWIDE DISTRIBUTOR OF SMOKEMASTER® AIR CLEANING SYSTEMS

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