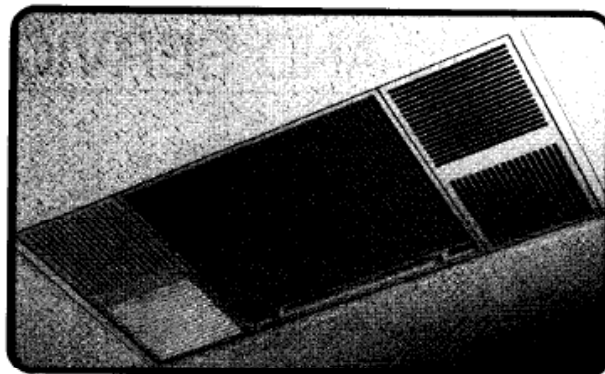


**SMOKEMASTER<sup>®</sup>**

THE QUIET ONE

For further information:  
BERRIMAN ASSOCIATES  
1-800-480-3630  
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# OWNER AND SERVICE MANUAL



SMOKEMASTER<sup>®</sup>  
MODEL X-11Q  
SELF-CONTAINED  
ELECTRONIC  
AIR CLEANER

CAUTION  
SHARP EDGES!  
WEAR GLOVES FOR  
INSTALLATION

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**MADE IN THE USA!**

# **OWNER'S MANUAL**

## **SMOKEMASTER® PART 1**

Your Smokemaster® is an advanced self-contained electronic air cleaner. The Model X-11Q is an efficient indoor pollution fighter and also reduces costly energy consumption. It is designed to be installed in the space of a 2' x 4' drop ceiling panel.

### **CLEAN AIR**

A clean and fresh atmosphere is a plus to any business. With your new Smokemaster® Electronic Air Cleaner, your customers and employees can now breathe air that is relatively free of smoke, dust or pollen. This is especially important with regard to today's concern with the effects of smokers upon nonsmokers and also for a more comfortable environment for allergy sufferers.

### **LOWER ENERGY CONSUMPTION**

A common solution to the problem of dense concentrations of smoke is to exhaust. Excessive exhausting is wasteful and very expensive. When exhausting expensively heated or cooled air, you also need to heat or cool the outdoor air coming in. A Smokemaster® X-11Q drastically reduces the need for outside air. This means you can save as much as 40 percent on heating and cooling bills.

### **REDECORATING**

Smoke particles also have a tendency to settle out as a dulling film on mirrors, windows, trophies, bottles and glassware. In fact, most of the particles which produce soiling and staining are just too small to be removed by average dusting. Electronic air cleaning gets rid of these particles before they have a chance to start the soiling process. Less soiling means longer periods between redecorating. If the appearance of your business is important to you, electronic air cleaning is certainly a plus.

### **EXTRA COMFORT AND SAVINGS**

The effective air pattern of the Model X-11Q creates a more comfortable atmosphere by constant slight air movement. This slight movement also helps to eliminate existing drafts. Another side benefit of the air recirculation pattern is that it distributes the heated or cooled air more evenly. This even distribution helps to reduce the amount of heated or cooled air needed for the same degree of comfort.

### **LOWER OPERATING COST**

In addition to reduced heating/cooling bills and redecorating bills, the relatively low cost of maintaining an X-11Q electronic air cleaner is another financial boost to your business. This air cleaner has no throwaway filter or other parts that must be periodically replaced. The durable electronic cells and prefilter screen are washed and used repeatedly. No replacement parts means reduced maintenance cost.

# COMPONENTS

## COMPONENTS OF THE X-11Q ELECTRONIC AIR CLEANER

### Cabinet

The sturdy corrosion resistant steel cabinet requires only 13-9/16" (344 mm) space above drop ceiling for installation.

### Mounting System

Specially designed support bars simplify installation - makes mounting of air cleaner safe and secure even during installation.

### Intake Grille

Attractive intake grille conveniently swings down with one inch removable metal mesh prefilter. All serviceable components are accessible through the grille opening.

### Power Module

Removable power module contains all electronic circuitry for easy service. This eliminates need for repair while standing on a ladder.

### Electronic Cells

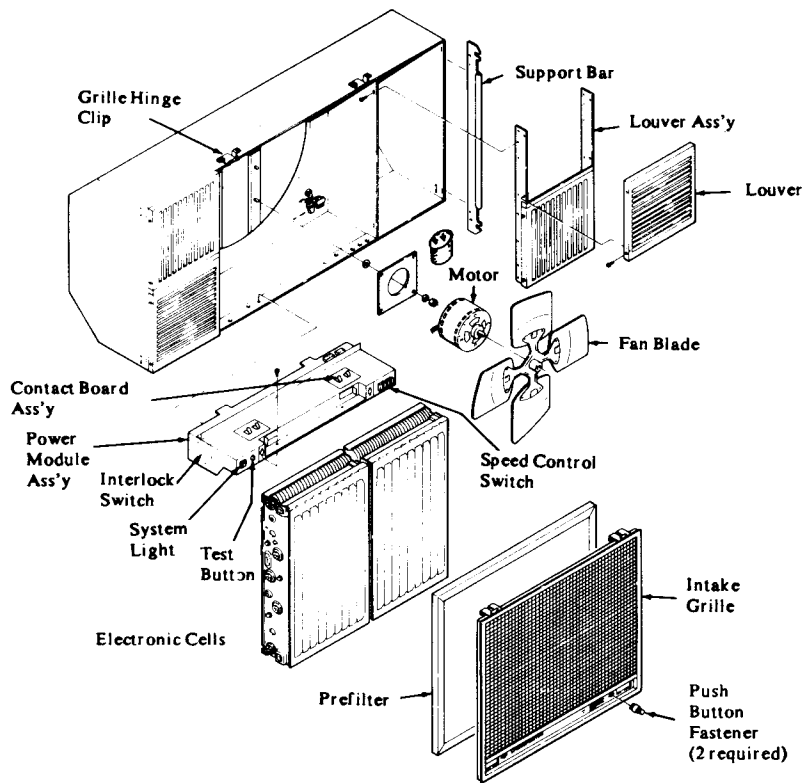
Two electronic cells charge and collect airborne particles. The compact design allows easy removal for cleaning and service.

### Fan Motor

Motor driven fan operates at 3 speeds providing the choice of circulation level. Elastomeric suspension system eliminates vibration noise.

### Adjustable Exhaust Grille

Four louvered exhaust grilles direct the cleaned air in four directions. Grilles can be positioned to maximize air cleaning effort according to room shape and "traffic" pattern.

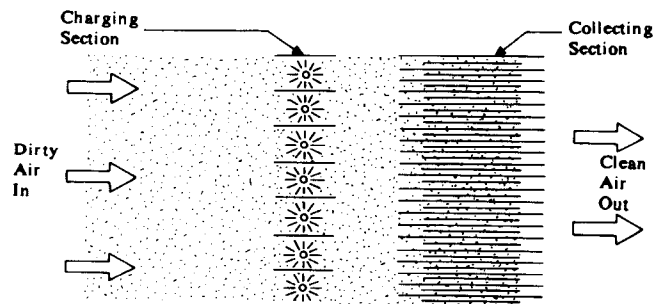


# PRINCIPLES OF OPERATION

## HOW YOUR ELECTRONIC AIR CLEANER WORKS

Airborne contaminants are trapped by a process called "Electrostatic Precipitation." The fan draws particulate laden air successively through the prefilter, the cell ionizing section and cell collector section. The ionizing section imparts an electrical charge to the individual particles which are then drawn by electrostatic forces to the oppositely charged collector plates. Cleaned air is then discharged back into the room.

Electronic cells must be washed periodically to maintain efficient performance.



# OPERATING INSTRUCTIONS

## SAFETY INTERLOCK SYSTEM

In order for all air cleaner functions to receive operating power, the intake grille must be latched securely in position. This actuates the safety interlock switch. An air cleaner will not function without grille in place.

## FAN SWITCH

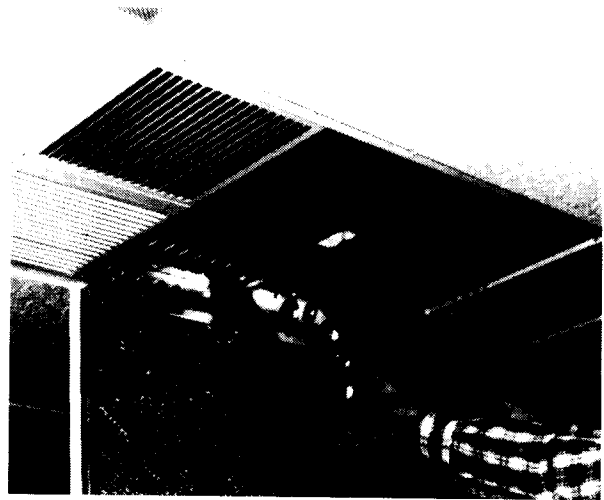
Your electronic air cleaner has an Off-Low-Med-Hi switch. The electronic collection system and built-in fan are designed to run simultaneously. Turn off the air cleaner before opening the access door to remove the electronic cells for cleaning.

## SYSTEM LIGHT

Your electronic air cleaner is equipped to tell you simply and quickly that it is working properly. The amber system light tells you at a glance the status of the power supply. The system light should be on when the unit is on.

## TEST BUTTON

Pushing the white button labeled "push to test" generates a snapping noise which indicates proper function of collector system.



# MAINTENANCE

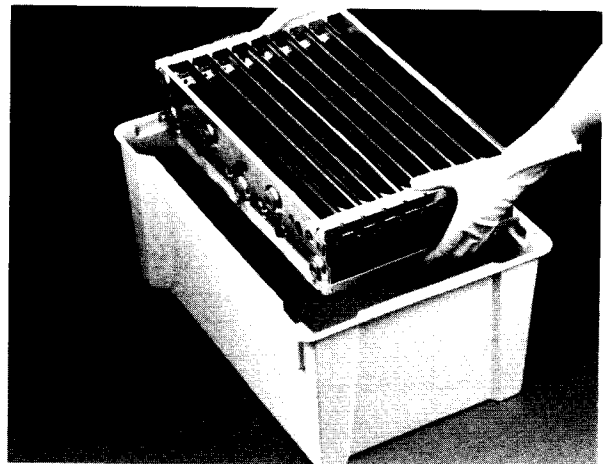
## WASHING THE ELECTRONIC CELLS AND PREFILTER

To maintain peak efficiency, the electronic cells and prefilter in your electronic air cleaner must be washed regularly. The washing is necessary to remove dirt particles collected from the air. Check with your Air Quality Engineering representative to determine how often your cells need to be washed for your particular application. Intake grille may be removed from machine for periodic washing.

1. Fill wash tub with cell cleaning detergent and hot water per detergent manufacturer's instructions.
2. Immerse cells in cleaner solution and remove immediately.
3. Set cells aside for five minutes to allow cleaner to penetrate.
4. Thoroughly rinse cells with very hot water. Make certain no residue remains on cells. Residue will adversely affect cell performance by causing frequent arcing and low efficiency.
5. Inspect collector plates for cleanliness. Repeat wash procedure if necessary. Check the electronic cells for broken wires and bent collector plates. The cells may be installed in the air cleaner and energized. The indicator light may remain off during the normal two hour drying time. However, if annoying arcing occurs during this period, the cell may be removed to dry.
6. **CELL CLEANER IS REUSABLE. SAVE FOR REPEATED USE.** Replace cleaning solution when cells are no longer being effectively cleaned.
7. Remove lint from prefilter with vacuum cleaner or wash with mild detergent solution.

### CAUTION

1. Be extremely careful when working with X-11Q electronic cells and filters. The edges, collection plates and ionizing wires of the cell may be sharp.
2. When cleaning the cells and filters, be sure to wear appropriate protective gear, especially goggles and gloves. Skin contact with alkaline detergent solution should be avoided. See warning label on detergent.
3. Use a stable platform to stand on when working with the electronic air cleaner.
4. Electronic air cleaners and their components are susceptible to damage. Take care when working with them to avoid equipment damage.



# SERVICE

In the event of air cleaner malfunction there are some simple checks you can perform to determine if a service technician must be called.

1. Check circuit fuse or breaker. Correct if fuse is blown or breaker is tripped.
2. Be sure electronic cells are in place, intake grille is closed and unit is turned on.

If the problem persists, call service technician. The following information will be useful:

1. Whether or not amber system light is on.
2. If pushing white test button results in a snapping sound.

## ARCING

From time to time you may hear a snapping noise coming from the electronic air cleaner. This arcing occurs when the air cleaner collects an unusually large particle, when cells are wet, extraordinarily dirty or damaged.

If an unusual amount of arcing persists, check first to determine if the electronic cells need washing. Look also for any sign of bent collector plates or broken ionizing wires.

If arcing still occurs when cell is clean and dry, consult your Air Quality Engineering representative or dealer for repair.

# INSTALLATION AND SERVICE SMOKEMASTER<sup>®</sup> PART 2

## SPECIFICATIONS

Model X-11Q includes two electronic cells and a 3-speed fan. Discharges air in up to four directions parallel to ceiling upon which it is mounted.

**AMBIENT TEMPERATURE RATING:** Shipping and Storage -40°F to + 150°F (-40°C to + 66°C).

### CAPACITY:

FAN SPEED	60 Hz		
	CFM	M <sup>3</sup> /h	EFF
HIGH	1250	2124	89%
MEDIUM	700	1190	95%
LOW	500	850	96%

**ELECTRICAL RATINGS:**  
Voltage and Frequency - 120 V ac, 60 Hz;  
220/240 V ac, 50 Hz

### Current and Power Consumption

FAN SPEED	120 V ac, 60 Hz		220/240 V ac, 50 Hz	
	W	A	W	A
HIGH	185	1.9	185	.9
MEDIUM	140	1.5	155	.7
LOW	120	1.3	132	.6

**EFFICIENCY:** Up to 96% efficiency is delivered as measured according to the NBS Dust Spot Method using atmospheric dust as outlined in the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 52-76.

**WEIGHT:** 101 lbs. (46 kg) shipping, 83 lbs. (38 kg) installed including electronic cells. Each cell weighs 9 1/2 lbs. (4.3 kg).

**DIMENSIONS:** 48" x 24" x 13 5/8" (1218 mm x 609 mm x 436 mm)

### ACCESSORIES:

Activated Charcoal Filter - Part No. 41034 (2 needed)

Remote Speed Control Kit - Part No. 07050

### Wash Container

Cell washing container with cover - Part No. 30182

### Cell Cleaner

Four-to-one concentrate liquid detergent - Part No. 45008. Stores in above wash container.

**UNDERWRITERS LABORATORIES INC. LISTED**

File No. E55711

Guide No. AGGZ

# GENERAL INFORMATION

## APPLICATION

The X-11Q is mounted in the room or area where the air is to be cleaned. One very common application is the removal of tobacco smoke from the air. Typical installations include conference rooms, lounges, offices, lunchrooms, etc.

Because it provides its own circulation, the X-11Q may be used in almost any application requiring the removal of airborne particulate contamination from an enclosed space.

### WARNING!

The X-11Q Electronic Air Cleaner is not explosion proof. It must not be installed where there is danger of vapor, gas, or dust explosion.

## MAKE-UP AIR

Recommended quantities of clean outdoor ventilation air for various applications are described in Table 2 of the ASHRAE Standard 62-89 "Ventilation for Acceptable Indoor Air Quality." ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., Phone #404-636-8400) notes that these recommended outdoor air quantities may be reduced by the use of clean, recirculated air if the IAQ Procedure 6.2 is used. Appendix E of ASHRAE 62-89 includes recommendations for the use of clean recirculated air. However, in most cases, adequate control of carbon dioxide generally requires a minimum clean outdoor air quantity of no less than 15 cubic feet of air per minute per person.

Additional ventilation may be required for toxic contaminants. In any event, the air cleaner must be used only in areas which are ventilated for human occupancy in order to disipate any incidental generation of ozone.

## SIZING

Electronic air cleaners are generally best sized according to the use of the area and the volume of the room (Air Changes per Hour Method).

Secondary factors to consider in applying electronic air cleaners include:

- type of contamination
- number of occupants
- outside air quality
- anticipated fan setting
- rate of contaminate generation

By considering these factors, the number of air

cleaners required can be adjusted up or down to account for abnormalities in operating conditions.

Follow Steps 1 through 4 below to determine the number of air cleaners required:

Step 1 - Measure the length, width, and height of the room in feet.

Step 2 - Determine the Air Changes per Hour required. See Chart A below.

Step 3 - Determine the C.F.M. (Cubic Feet per Minute of Air). See Chart B below.

Step 4 - Plug the figures from Steps 1-3 into the sizing formula below and calculate the number of air cleaners required.

**CHART A - AIR CHANGES PER HOUR**

Load	Description of Application	Air Changes per Hour
Light	General offices & computer rooms	4-5
Average	Conference and break rooms	6
Heavy	Designated smoking areas, bingo halls, bars, & extra smoky areas	8-10

**CHART B - CUBIC FEET OF AIR PER MINUTE**

The air cleaner has a three-speed fan motor. Use the C.F.M. that corresponds to the speed that the air cleaner will operate on normally. Low speed where noise is a prime concern and high speed where noise is not a factor.

Model X-11Q	Low	Medium	High
C.F.M.	500	700	1250
Noise Level	51 dB(A)	58 dB(A)	70 dB(A)

**SIZING FORMULA**

$\frac{L \times W \times H \text{ of Room} \times \text{Air Changes / Hr.}}{\text{C.F.M. of Air (see Chart B) } \times 60 \text{ Min.}} = \# \text{ of X11Q's}$	
---	--

**NOTE:** The maintenance interval for cell cleaning can be lengthened by increasing the number of air cleaners beyond the required number.

# INSTALLATION

**IMPORTANT! Read these instructions carefully. A hazardous condition or damage to product could result if instructions are not followed.**

## CAUTION

1. Do not connect power source until after the electronic air cleaner is mounted. Electrical shock and equipment damage may result.
2. Be sure to turn air cleaner off prior to service or installation. Motor has automatic thermal overload so it will stop when overheated. It will automatically start after a cooling period.
3. Avoid electrical shock by being careful when air cleaner is turned on for electrical check. Also, be careful when working near air cleaner's moving parts.
4. Wear gloves when installing air cleaner to protect hands from cuts.

## EQUIPMENT NEEDED

1. Phillips screwdriver
2. Wire cutters
3. Pliers
4. Knife
5. Hacksaw
6. Electric drill [with 1/8" (3.17 mm) bit]
7. Wire pliers
8. Four 1/4" (6.36 mm) turnbuckles from your local hardware store
9. Twelve gauge galvanized steel wire (enough to hang 4 wires from true ceiling to T-bar level)
10. Enough 12 or 14 gauge electrical wire and conduit to reach nearest unswitched circuit (see electrical installation instructions)
11. Junction box fittings as needed

## ITEMS SUPPLIED AS LOOSE PARTS

1. Two support bars
2. Eight #8 self-tapping sheet metal screws
3. Four flat washers
4. Two wire connectors
5. Four vinyl extrusions

## UNPACKING

1. Remove intake grille (center grille) by depressing push button fasteners, tipping and disengaging grille.
2. Take out prefilter.
3. Remove electronic cells by turning the two retaining turnstile latches, then raise cell off hooks.

4. Unplug power module from air cleaner before attempting to complete removal. Unscrew and remove power module (See Fig. 1). Hint: Tilt power module away from air cleaner to facilitate removal.

5. Lift air cleaner out of box.

## PREPARATION

The Model X-11Q air cleaner is designed to be installed within a T-bar drop ceiling. Remove tiles from ceiling to open an area 23 inches (583.76 mm) x 47 inches (1192.89 mm) [one 2 foot (.61 m) x 4 foot (1.22 m) ceiling tile] to accommodate air cleaner. The area between the drop ceiling and true ceiling must be free of obstructions such as pipes, ducts, etc. There must be at least 14 inches (355.33 mm) between the bottom of the T-bar and true ceiling.

Make sure air cleaner will be oriented for good air circulation. The exhaust grilles can be disassembled and reassembled to provide alternate air patterns.

## MOUNTING

### WARNING!

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

1. Attach four 12 gauge galvanized steel support wires to true ceiling at location shown in Fig. 1. Twist each wire at least four times to provide safe support for the air cleaner. The free end of each wire should extend six inches or more below the bottom of the T-bars.

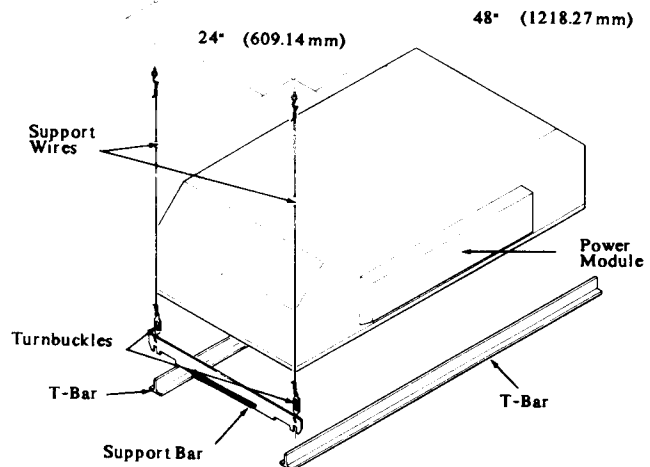


FIGURE 1

2. At the end of each opening, set a support bar across the T-bars. The "J" shaped portion of the support bars should be oriented so the hook side of the "J" is toward the opening (not toward the adjacent T-bars). See Fig. 1.



3. Using an electric drill with an 1/8" (3.17 mm) drill bit, drill through the holes in the stepped portion of the support bars and through the T-bars. Attach the support bars to the T-bars with four #8 sheet metal screws provided.
4. Hook the turnbuckles to the support bars and then secure the support wires to the eyes of the turnbuckles (see Fig. 1). Twist the wire at least four times.
5. Adjust the turnbuckles until the support bars are securely suspended by the support wires. To avoid lifting or buckling the T-bar framework, do not over-tighten the turnbuckles.
6. Lift air cleaner body into opening and let body drop into "J" shaped portion of support bars.
7. Fasten air cleaner body to support bars using four #8 self-tapping screws and flat washers. Screws are installed through slots in ends of air cleaner into support bars. Adjust location of air cleaner relative to support bars via slots prior to tightening of screws.
8. Install U-shaped vinyl extrusions around perimeter of air cleaner. Vinyl extrusions slip over lip of T-bar and trim out the air cleaner in the event of uneven gaps.

5. Connect a green wire from the grounding terminal in the air cleaner junction box to the grounded conduit of the building wiring system. If the building does not have conduit, it will have a green or bare grounding conductor for connection to the air cleaner green wire. **DO NOT** connect the grounding wire from the air cleaner to the white wire of the building. The air cleaner frame must be electrically connected to the frame of the building or the electrical conduit system. Input electrical power should be run through flexible conduit as recommended by the National Electrical Code or your local authority.

## ELECTRICAL INSTALLATION

### CAUTION

This procedure should be attempted only by persons qualified to install electrical wiring. All wiring must comply with applicable codes and ordinances.

1. Locate an unswitched 120 V ac, 60 Hz or 220 V ac, 50 Hz power circuit with a junction box near the air cleaner location.
2. Check the circuit breaker or fuse for that circuit and determine whether it is rated 15 amperes or 20 amperes (as marked on the device). The required copper wire size will be:  
AWG #14 for 15 ampere circuits  
AWG #12 for 20 ampere circuits
3. **CAUTION:** Turn off the building circuit at the fuse or circuit breaker before proceeding.
4. Connect black and white wires from the pigtails in the air cleaner junction box to the corresponding colors in the supply circuit (See Fig. 2.)

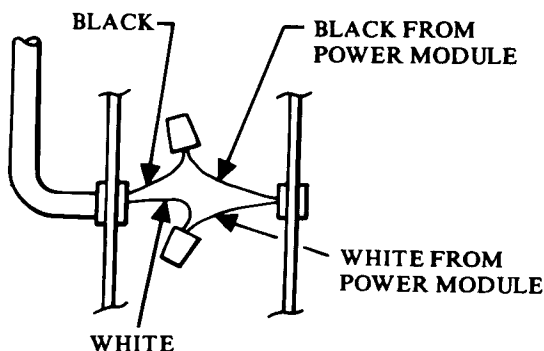


FIGURE 2

## EXHAUST GRILLE ORIENTATION AND INSTALLATION

Each of the four louvered exhaust grilles can be oriented individually to provide optimum airflow pattern. Simply unscrew the louvered grilles from the grille bars, rotate to any of three directions\* and reattach grilles to bars. Screw exhaust grille assemblies to air cleaner (See Fig. 3).

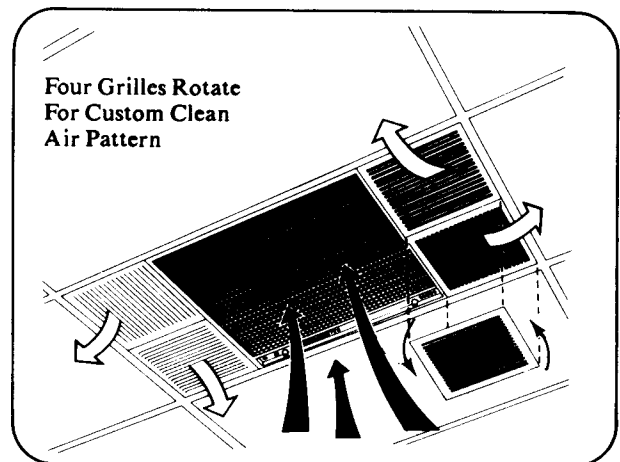


FIGURE 3

\*Orienting a louvered grille to blow air back toward the intake grille (fourth direction) is not recommended since good circulation of cleaned air in the room is defeated.

## REASSEMBLY

1. Replace grille hinge clips if previously removed.
2. Replace power module and reconnect electronic plugs.
3. Install electronic cells.
4. Check to make sure the electronic cells are oriented for correct airflow. Airflow arrows on side of cell should point up. The contact board on the cell aligns with contact board on the power module.
5. Make sure the intake grille opens easily and electronic cells and prefilter are secure in unit.
6. Hang intake grille, position intake prefilter and latch intake grille into place.
7. Turn electric power back on.
8. Make sure fan runs on all three speed settings. System light should be on when fan is running.
9. Press test button. An audible snap indicates collection section of cell is functioning.
10. Clean up installation area.

# CHECKOUT

Before leaving the installation, be sure the X-11Q is properly installed and operates correctly. Check the following:

## MOUNTING

- The X-11Q is securely fastened to the true ceiling.
- Unit is properly oriented for good air circulation.

## ASSEMBLY

- Electronic cells are correctly oriented; airflow arrows pointing toward fan motor.
- Prefilter screen properly installed.

## OPERATION

- Fan runs correctly on all speed settings.
- System light turns on when fan is running.
- Snapping noise is heard when test button is pushed.
- Opening intake grille stops fan and turns out system light.

**NOTE: If the X-11Q does not appear to work right, refer to ELECTRICAL TROUBLESHOOTING.**

## CLEANUP

- Clean the surfaces of the air cleaner.
- Clean up the installation area.

# SERVICE

### WARNING!

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

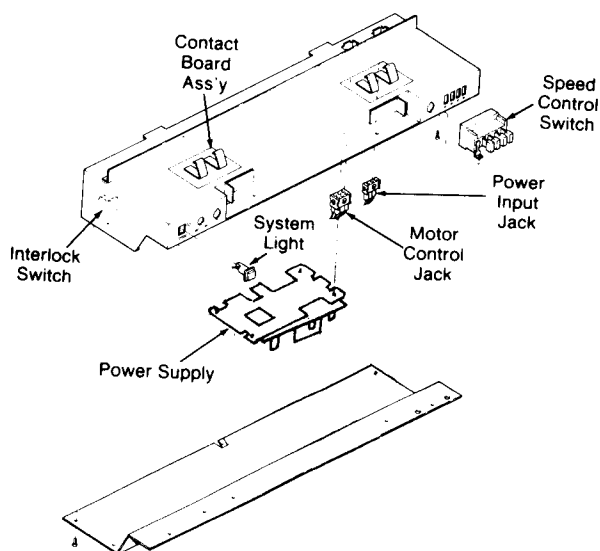
## MOTOR REPLACEMENT PROCEDURE

1. Disconnect power at fuse or circuit breaker.
2. Open intake grille. Remove cells to provide access to motor.
3. Remove fan blade from motor.
4. Disconnect fan motor leads at plastic connector near fan motor.
5. Remove 4 nuts holding motor to unit to remove motor.
6. Install new motor, connect electrical lines and replace fan, cells, prefilter and grille.
7. Connect power and check new motor operation.

## POWER SUPPLY REPLACEMENT PROCEDURE

1. Disconnect power at fuse or circuit breaker.
2. Open intake grille and remove cells.
3. Disconnect 3-wire power input plug and 6-wire motor control plug from power module.
4. Remove 2 sheet metal screws holding power module to cabinet and allow power module to swing forward and drop down.
5. With power module on workbench, remove back cover from power module by removing 8 sheet metal screws.
6. Disconnect Dark Grey (P4) and Pink (P3) high voltage wires from power supply and unplug plastic connector.

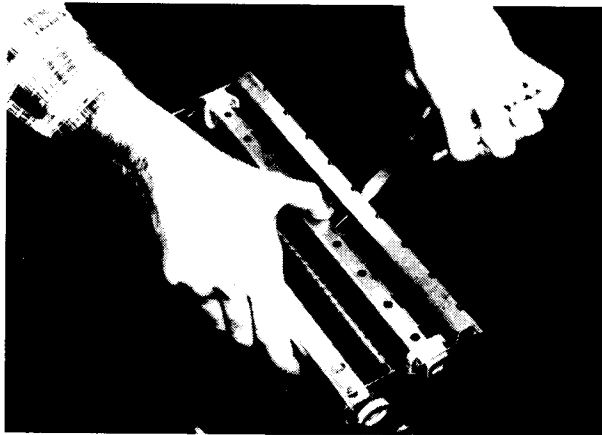
7. Cut wire ties holding the power supply wire harness to power module.
8. Remove 4 nuts and washers holding power supply in place and remove power supply.
9. Mount new power supply in place, reconnect high voltage wires and reconnect plastic connector.
10. Use wire ties and re-tie wires in place.
11. Replace back cover of power module.
12. Re-install power module in air cleaner and reconnect 2 plastic plugs to power module.
13. Replace electronic cells and close intake grille.
14. Reconnect power. Push test button and check indicator light to be sure unit is operating properly.



## IONIZING WIRE REPLACEMENT

The fine tungsten ionizing wires in the charging section of the electronic cell may break or become damaged. Inspect the cell from the upstream side after washing to make sure that none of the wires are broken or out of position. During operation, a broken or deformed wire generally causes a short to ground, possibly with visible arcing or sparking. This condition, or any other short in the ionizing section of the cell, will cause the indicator light to go out.

Broken wires must be replaced for air cleaner to function effectively without arcing. Remove all parts of the broken wire. If necessary, the cell may be temporarily used with one wire missing. See PARTS LIST for part number of the replacement wire. Wires come cut to length with eyelets at each end for easy installation in the electronic cell.



2. Hook one end of the ionizing wire over the spring connector at one end of the cell.
3. Hold the opposite eyelet with a needle-nose pliers and stretch the wire the length of the cell. Depress the opposite spring connector and hook the eyelet over it.

1. Use care to avoid damage to the spring connector or other parts of the cell during the installation.

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## ELECTRICAL TROUBLESHOOTING

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### WARNING!

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

### TROUBLESHOOTING PROCEDURE

The following troubleshooting procedure has been designed to speed the service technician's work and insure that any malfunction in the electronic air cleaner is quickly detected and properly repaired.

Most of the troubleshooting steps can be performed by observing the indicator light. This light is powered by the resonating winding on the high voltage power supply and is ON whenever the high voltage power supply is working properly.

This procedure is outlined in the electrical troubleshooting flow chart. A complete description is provided on the following pages.

The troubleshooting procedure description is divided into two sections.

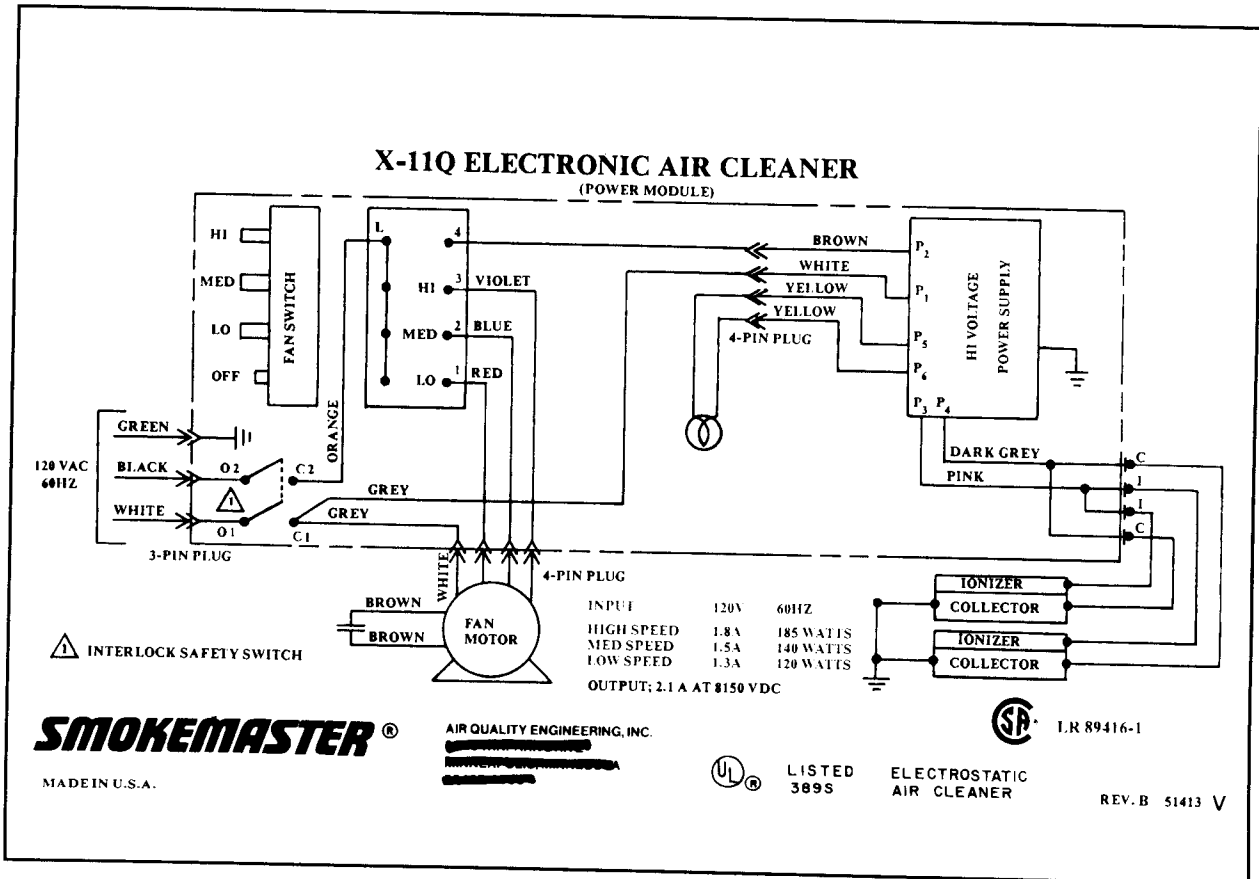
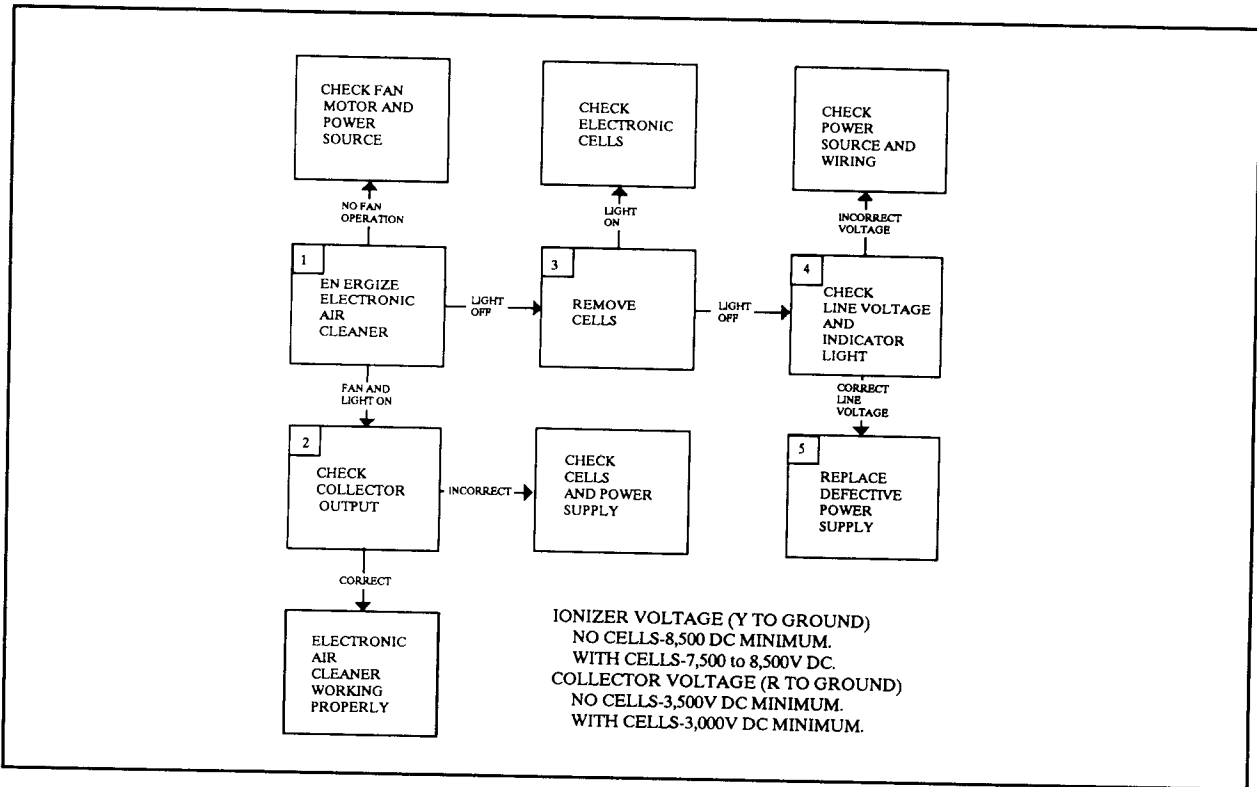
1. **DIAGNOSTIC CHECKS** -- Follow the sequence of checks in the troubleshooting flow chart to locate the cause of a failure within the air cleaner.
2. **COMPONENT CHECKS** -- Explains how to locate a faulty component within an assembly, or how to prove a component good or bad.

### TOOLS AND EQUIPMENT

Troubleshooting the X-11Q can be accomplished with only a few tools:

- Screwdrivers -- long shank, plastic or rubber handles; 2 required for some arc checks.
- Needlenose pliers -- for stringing ionizing wires.
- Test Meter, or Simpson 260 with 25 k V dc probe.
- Soldering iron for replacing components.
- Neon test lamp for line voltage.

# ELECTRICAL TROUBLESHOOTING



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# DIAGNOSTIC CHECKS

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## DIAGNOSTIC CHECKS

### 1. ENERGIZE ELECTRONIC AIR CLEANER

a. Be sure that the electronic cells and prefilter screen are clean, dry, and properly installed in the air cleaner.

b. Energize the air cleaner and check for operation on all fan speeds. In each case the fan should run and the SYSTEM light should turn on.

-If the fan does not run, check the fan motor, power source, and interlock safety switch.

-If the SYSTEM light does not come on, go to Step 3.

-If the fan runs and the SYSTEM light comes on, go to Step 2.

### 2. CHECK COLLECTOR OUTPUT

a. With air cleaner turned on, push TEST BUTTON to momentarily short out the collector section of the electronic cell.

b. Arcing indicates that the electronic air cleaner is working properly.

### 3. REMOVE CELLS

a. Turn off the air cleaner.

b. Open the intake grille by pushing 2 push buttons holding grille in place. Remove the electronic cells. Close the grille.

c. Turn the air cleaner ON.

-If the light comes on now, check the electronic cells for short circuit.

-If the light remains off, go to Step 4.

### 4. CHECK POWER SUPPLY AND INDICATOR LAMP

a. Remove power module from the air cleaner. Remove power module cover and install back onto the air cleaner without the cover. (See removal instructions under Service.) NOTE: Cover must be re-installed after Diagnostic Check.

b. Use a neon test light or a voltmeter to check line voltage on the primary of the high voltage power supply.

-If the correct line voltage is present, continue the checkout.

-If the correct line voltage is not measured on the primary of high voltage power supply, check backwards through the switch and wiring to the power source until the problem can be located and corrected.

c. Check the voltage indicator light.

-If the voltage is correct (about 120 V ac), and if the light is out, replace the light.

-If there is no voltage, or less than 100 V ac, replace the power supply.

## COMPONENT CHECKS

### CHECK FAN MOTOR AND POWER SOURCE

-If the fan does not run when the switch is on HIGH, MEDIUM, and LOW positions, check voltage supplied to the motor.

1. 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.

2. If the correct line voltage is not measured, check back through the wiring to the power source, including interlock safety switch.

### CHECK ELECTRONIC CELLS

#### VISUAL INSPECTION

Carefully examine the electronic cells. Carefully look for:

- Bent collector plates
- Broken ionizing wires
- Dirt accumulation on insulators
- Dirt accumulation on collector plates
- Contact tabs - ionizer and collector damage

#### CHECK FOR SHORT CIRCUITS

Use an ohmmeter to check resistance between the outside frame of the cell and both the ionizer and collector contacts. In each case, the resistance should be infinite (open circuit).

# SMOKEMASTER

PN 41034  
ACTIVATED CARBON FILTERS

## APPLICATION:

Activated Carbon Filters, PN 41034, are used in the X-11Q to remove odors. Two filters are supplied with the X-11Q and are designed to lay on the top of the exhaust louver grille assemblies.

## WARNING:

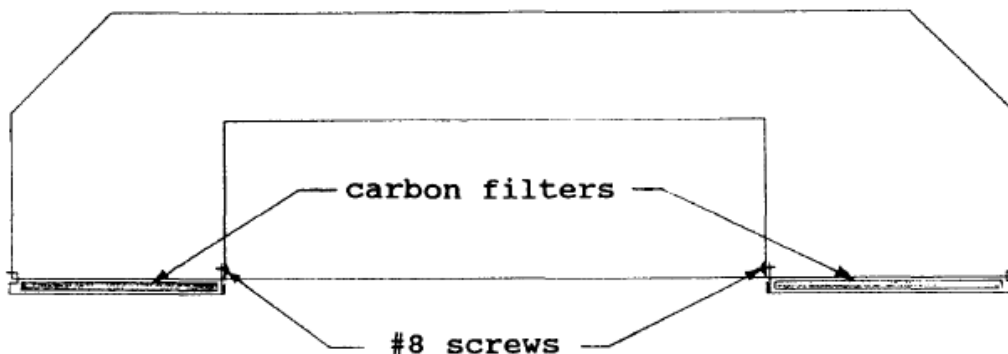
Air cleaners with or without activated carbon filters are not a substitute for make-up air. Air cleaners must be used only in areas which are ventilated for human occupancy.

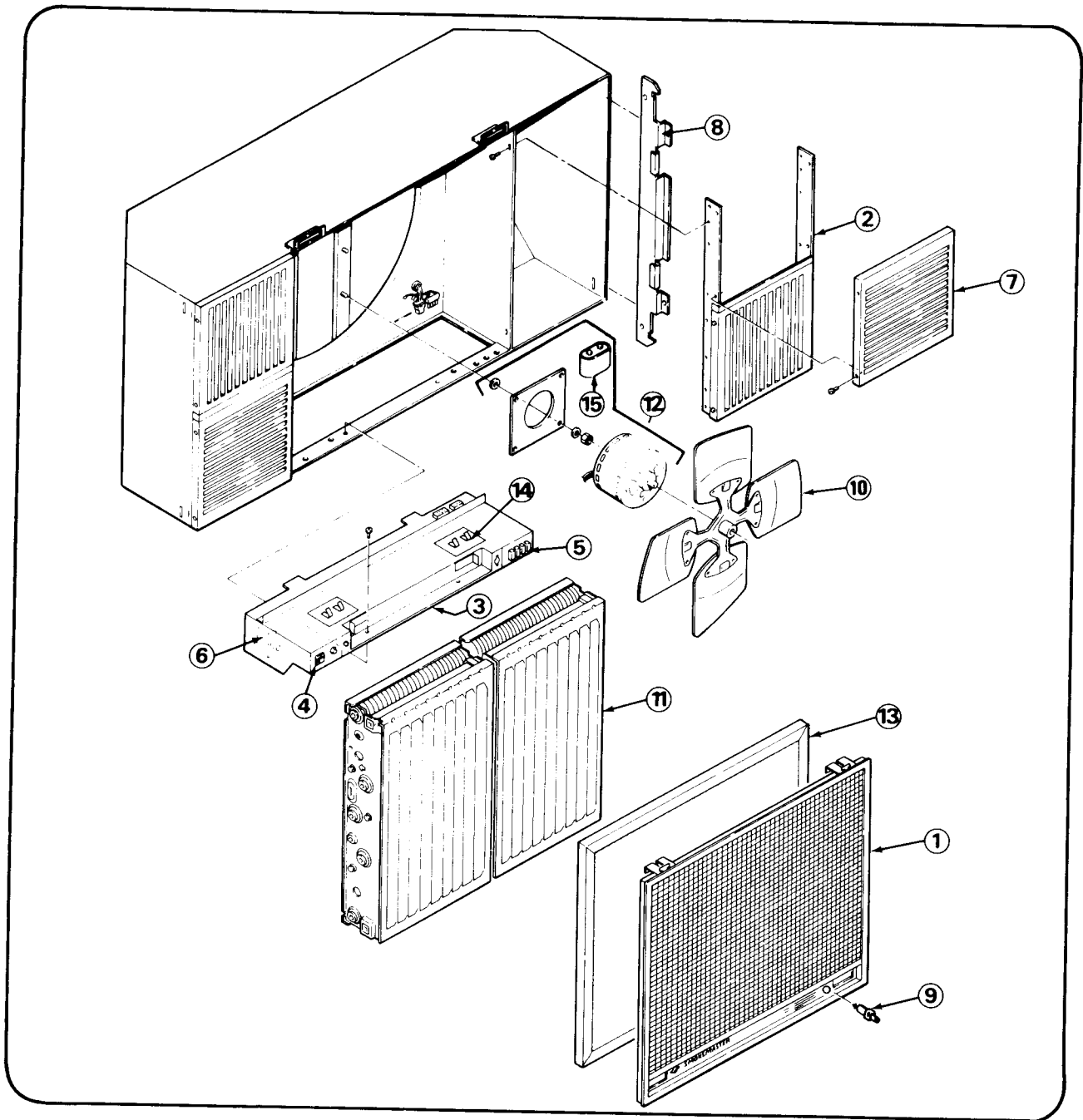
## INSTALLATION:

1. Remove the filters from the plastic bags.
2. Lay the activated carbon filter on top of each exhaust louver.
3. Install each louver assembly by guiding the hooked ends through the slots in the cabinet. The side of the exhaust louver assembly opposite the hooked end slides behind the edge of the shroud. Two #8 sheet metal screws fasten the louver assembly into position. NOTE: The intake grille and the cells must be removed before the louvers can be installed. See the drawing below.

## REPLACEMENT SCHEDULE:

Regular replacement of the activated carbon filters (every 3-6 months) will help to remove odors.





NO.	DESCRIPTION	PART NO.
1	Grille Assembly	05112
2	Louver Assembly	05113
3	Power Module Assembly/60 HZ	05116
	Power Module Assembly/50 HZ	05367
4	System Light	10097
5	Speed Control Switch	10110
6	Interlock Switch	10106
7	Louver	20668
8	Hanger Bracket	20675
9	Push Button Fastener	30492
10	Fan Blade	37009
11	Electronic Cell	38001
12	Motor Replacement Kit/60 HZ	05299
	Motor Replacement Kit/50 HZ	05360
13	Prefilter	41021

NO.	DESCRIPTION	PART NO.
14	Contact Board Assembly	05110

PARTS NOT ILLUSTRATED		PART NO.
Power Supply/60 HZ		07070
Power Supply/50 HZ		07088
Ionizing Wire		38004

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# GUIDE SPECIFICATIONS

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## MODEL X-11Q

**SCOPE:** The following describes a self-contained electronic air cleaning device to be installed in a 2 x 4 foot ceiling tile opening.

**DESCRIPTION:**

1. Unit shall operate from two wire 120 Vac, 60 Hz or 220 Vac, 50 Hz, power source, drawing no more than 1.9 amperes.
  2. Provision for ground wire connection in field wiring compartment shall be made.
  3. Optional remote control system shall be available from equipment manufacturer.
  4. Optional charcoal filters to remove nuisance odors and gaseous contaminants shall be available from the manufacturer.
  5. Fan motor shall be of PSC with ball bearings design and capable of running at three distinct speeds: high, medium and low.
  6. Air discharge direction shall be alterable to allow most effective air flow pattern.
  7. The unit shall not protrude below T-bar ceiling system.
  8. Atmospheric dust spot efficiency shall be 88% minimum when tested according to ASHRAE Standard 52-76, and up to 96% efficient on low speed.
  9. Electronic power module shall be removable intact to allow for easy bench testing of high voltage and control function.
  10. Built-in interlock switch system shall disconnect power from all functions when intake (service) grille is opened.
  11. Airflow on High fan speed shall be a minimum of 1250 cfm (35.40 m<sup>3</sup>/min).
  12. Unit shall include 1" metal mesh prefilter.
  13. Fan motor to be mounted on four elastomeric vibration isolators.
  14. Unit shall have independent intake grille for easy access to serviceable components.
  15. Unit shall have a test button and system light to indicate proper operation of high voltage power system.
  16. Unit shall have voltage doubler system to provide over 8,000 volts to ionizing section and over 4,000 volts to collector section of cell.
  17. Unit shall have hanger bar system to provide safe and secure installation of air cleaner.
  18. Design of air cleaner shall limit production of noxious ozone to within OSHA approved levels.
  19. High voltage power supply design shall limit short circuited output current to less than 5 mA.
  20. Units shall have a total electronic cell plate area of at least 105.8 ft.<sup>2</sup> (9.82 m<sup>2</sup>).
  21. Unit shall be listed by Underwriters Laboratories for use as an electrostatic air cleaner.
  22. Unit shall be listed by Canadian Standard Association for use as an electrostatic air cleaner.
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