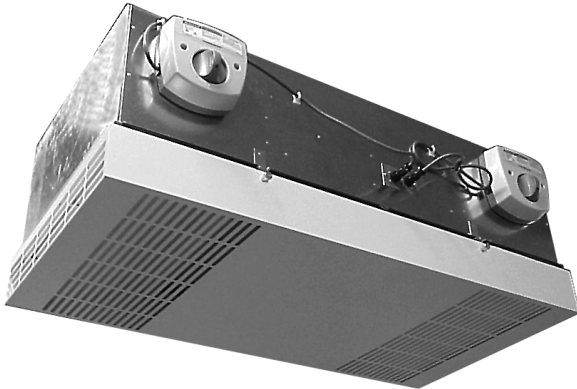


F111U In-Ceiling Media Air Cleaner with Ultraviolet Air Treatment System

PRODUCT DATA



APPLICATION

The F111U In-Ceiling Media Air Cleaner is a media air cleaner that uses a three-speed direct drive forward curve blower motor with ultraviolet lights. The air cleaner removes airborne particles such as dust, soot, mold spores, pollen and some cooking smoke, and kills microbial contaminants in the air circulating through the unit.

FEATURES

- **Three levels of filtration:**
 - 99.97% High Efficiency Particulate Air (HEPA)
 - Hospital grade filter 95% efficient at 0.3 micron (MERV 16)
 - 95% ASHRAE (MERV 12)
- **UV-C light kills airborne bacteria.**
- **UV lamp does not produce ozone.**
- **Circulates up to 1200 cfm.**
- **Designed to overcome the increase in air flow resistance normally caused by filter loading.**
- **White or black color cover to complement the ceiling.**
- **Sealed and interlocked design prevents accidental exposure to ultraviolet light.**
- **Innovative design of UV module prevents lamp from lighting unless the base is correctly mounted.**
- **3-Speed remote wall switch.**

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SPECIFICATIONS

IMPORTANT

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. 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.

Models: Refer to Table 1 for model descriptions.

Grill Color: White (standard) or Black.

Blower/Motor: Three-speed, direct drive, forward curve.

Installation Weight:

Approximately 115 lb.

Sound Level at 3.3 ft (1m):

Low speed: 53 dBA (3 speed models only).
 Medium speed: 57 dBA (3 speed models only).
 High speed: 61 dBA.

Temperature Ratings:

Ambient Temperature Range: 30°F to 104°F (-2°C to 40°C).

Relative Humidity:

Up to 95% Relative Humidity, non-condensing.

Grille Type: Perforated metal.

Mounting: Recesses into opening on the ceiling.

HEPA Filter Performance:

Total Efficiency: 99.99% combined capture kill/effectiveness. (Test conducted against *serratia marcescens* bacteria with a total airflow rate of 900 cfm using new lamps.)

Particle Filtration: 99.97% (Particle collection efficiency of 0.3 micron particle size.)

UV Efficiency: Over 80% (Mathematical simulation of an F111U showed a single-pass kill rate of *serratia marcescens* bacteria with a total airflow rate of 900cfm using new lamps.)

Airflow Rate: 900 cubic feet per minute (1530 cubic meters per hour.)

Approvals:

Underwriters Laboratories Inc.: Listed. (cUL)
 Listed: E202270

NOTE: This product is approved by UL for installation in air handling spaces only when optional shrouds are installed over both of the UV modules. See Table 3.

Accessories:

Remote 3-Speed Wall Switch.
 UV Module Shrouds.

Replacement Parts: See Parts List, Table 3.

Dimensions: See Fig. 1.

Table 1. F111 (Series 3) Description.

Model	Input Power	Efficiency	Air Flow in CFM (m ³ /hr)		
		Particulates at 0.3 Micron (DOP Test)	High	Medium	Low
F111U1253W-3S	120 Vac, 60 Hz, 8.5A	95% ASHRAE (MERV 12)	1200 (2040)	875 (1490)	450 (760)
F111U1063W-3S	120 Vac, 60 Hz, 7.2A	99.97% HEPA	950 (1610)	800 (1360)	450 (760)
F111U1020W-3S	120 Vac, 60 Hz, 7.5A	95% at 0.3 micron (MERV 16)	1025 (1740)	800 (1360)	450 (760)

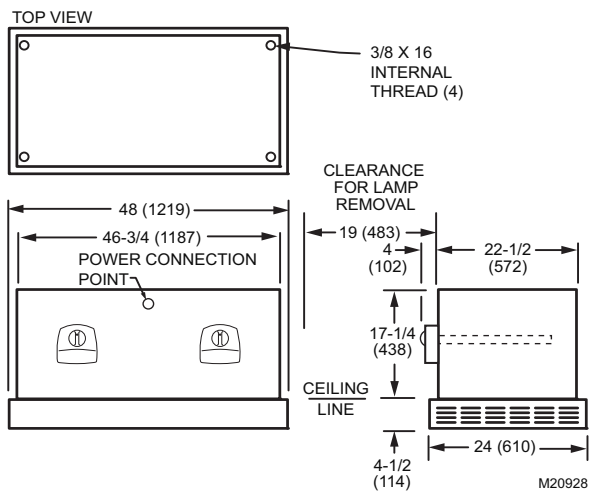


Fig. 1. Approximate dimensions of F111U in in. (mm).

PLANNING THE INSTALLATION

The number of F111U air cleaners required is determined by taking into account the number of occupants and the volume of the space. Other factors include type of contamination, outdoor air quality and planned use of the space.

Refer to Table 2 for general guidelines when determining how many air cleaners are needed.

EXAMPLE: One air cleaner at 900 cfm can provide 10 air changes per hour in a 12,000 cubic feet (159 cubic meters) area. Table 2 suggests two air cleaners for a 12,000 cubic feet area. Additional air cleaners can be required in locations with increased activity or where contaminant generation rates are unusually high.

If any questions should arise concerning determining the number of air cleaners needed for an area, consult your local Honeywell Commercial Air Cleaner Distributor.

Table 2. Determining the Minimum Number of Air Cleaners Needed for a Space.

Space Volume (L x W x H) in Cubic Feet (Cubic Meter)	Minimum Number of Air Cleaners
5000 to 9000 (140 to 255)	1
9001 to 16000 (255 to 450)	2
16001 to 21000 (450 to 600)	3
21001 to 27000 (600 to 765)	4
27001 to 30000 (765 to 850)	5
30001 to 36000 (850 to 1020)	6

! WARNING
TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Installation Work And Electrical Wiring Must Be Done By Qualified Person(s) In Accordance With All Applicable Codes And Standard, Including Fire Rated Constructions.
2. When Cutting Or Drilling Into The Wall Or Ceiling, Do Not Damage Electrical Wiring And Other Hidden Utilities.
3. Never Place A Switch Where It Can Be Reached From A Tub Or Shower.
4. Use This Unit Only In The Manner Intended By The Manufacturer. If You have Questions, Contact The Manufacturer.
5. Before Servicing Or Cleaning Unit, Switch Power Off At Service Panel And Lock Service Panel To Prevent Power From Being Switched on Accidentally.
6. If This Unit Is To Be Installed Over A Tub Or Shower, It Must Be Marked As appropriate For The Application and be connected to a GFCI (Ground Fault Circuit Interrupter) - protected branch circuit.

Choosing a Location

Choosing the correct location for the air cleaner affects the overall performance of the unit. The bidirectional airflow pattern must flow into the longest reaches of the zone being cleaned. See Fig. 2.

NOTE: The F111U Has Not Been Investigated For Use In Fire Resistance Rated Construction.

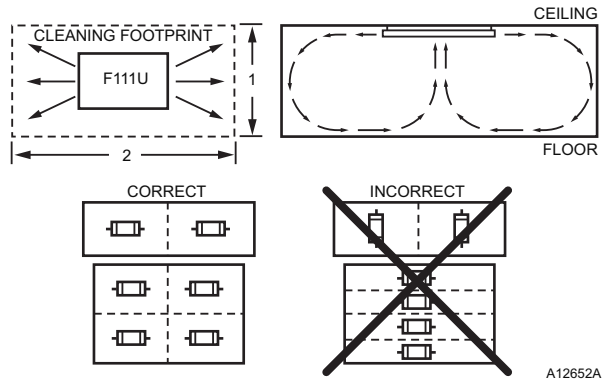


Fig. 2. Correct positioning of the air cleaner for optimum cleaning.

The air cleaner is designed to be suspended centrally in a space and mounted into or on a ceiling. The cleaning footprint of the air cleaner is rectangular with air patterns that move clean air to the corners of the area while drawing contaminated air up from the center of the area. See Fig. 2.

When multiple air cleaners are installed, position them so the areas to be cleaned are equal. Consider that the air throw in one direction is approximately 50 ft (15m).

IMPORTANT

Never hang the air cleaner higher than 16 ft (5m) above the floor.

INSTALLATION

! WARNING

Explosion Hazard Possible.
Can cause personal injury or equipment damage.
 Do not install or use the F111U air cleaner where there is any danger of gas, vapor or dust explosion.

IMPORTANT

This air cleaner has not been investigated for use in the ceilings of fire-resistant assemblies.

! WARNING

UV Light Hazard.
Harmful to bare skin and eyes.
 Can cause temporary or permanent loss of vision. Never look at lamps while illuminated. Only view illumination using light indicator on lamp knob.

IMPORTANT

Do not attempt to alter physical characteristics of F111U. Do not remove any light baffles or attempt to override lid interlock switch. Do not attempt to bypass interlock switch in mounting holes of UV base unit.

CAUTION

Electrical Hazard.

Can cause personal injury or equipment damage.
Turn off power before installing or servicing the air cleaner.

IMPORTANT

The F111U was carefully designed to assure no unsafe levels of UV light leave the unit. The slight glow of light at the air vents is not harmful.

IMPORTANT

Stand on a stable platform when working with the air cleaner.

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

Unpack the Air Cleaner

Check that all components are included. The unit consists of:

- cabinet and grille/door assembly
- High-efficiency media filter
- Pre-filter
- Two ultraviolet base modules
- Latches (2)
- 3-speed switch module
- Literature

Make Opening (for Mounting in a Drop Ceiling)

1. Size the opening to fit the air cleaner cabinet as closely as possible.
2. Frame the opening to provide adequate support for the cabinet.
3. Be sure the cabinet fits snugly in the opening; allow no more than 1/4 in. (6 mm) from the opening to each side of the cabinet.
4. Provide access through ceiling adjacent to air cleaner for UV lamp access.
5. Cover this opening with an easily-removable panel.
6. Cover the framing and any unused portion of the opening with wallboard, plywood, or other material and finish to match the ceiling.

Electrical Hookup

All wiring must comply with applicable codes and ordinances. The power source must agree with the model type: 120V, 60 Hz.

1. Locate the prepunched hole in the side of the cabinet.
2. Remove the prepunched hole connection box cover plate.
3. Refer to Fig. 3 for typical electrical diagrams.

WARNING

Risk of Fire or Electric Shock.

Can cause personal injury or equipment damage.
Use only Honeywell Remote Speed Switch to regulate air cleaner speed. Using a different speed switch may void the warranty.

IMPORTANT

- Be sure the air cleaner is grounded for correct operation and safety.
- Canadian installation: NEVER install in ceilings with thermal insulation value greater than R-40.

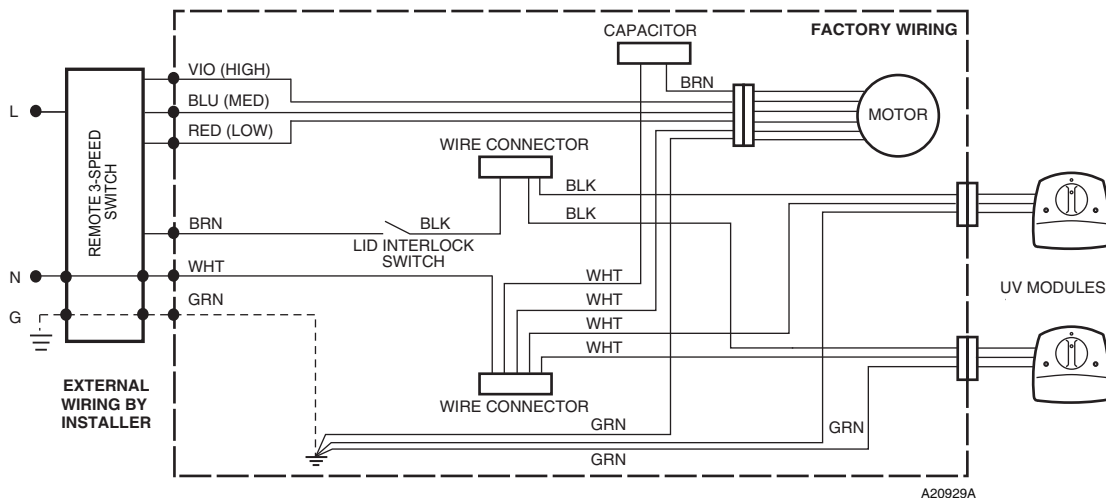


Fig. 3. Typical F111U 120V, 60 Hz wiring diagram.

Mounting Air Cleaner Cabinet

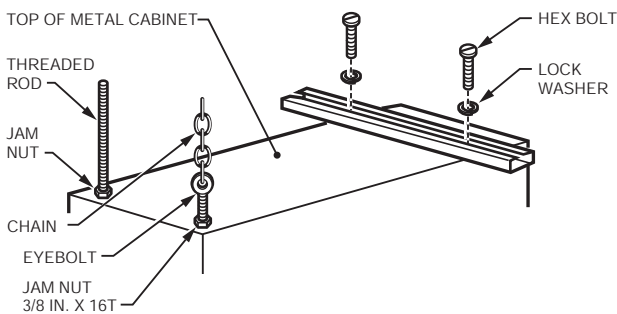
The air cleaner can be mounted in a drop ceiling system or hung in an open area. Both mounting methods require the

air cleaner to be level and positioned with the grill facing down for correct operation.

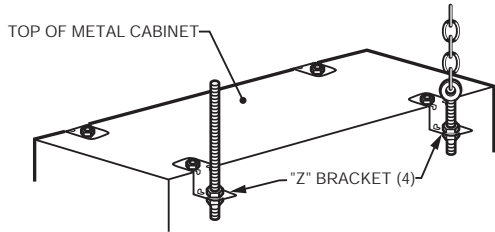
1. Remove the lid (grill) from the carton and set it aside.
2. Remove all filters.
3. Fit the cabinet into the prepared ceiling opening or position on the ceiling.
4. Use the four 3/8 x 16T internal nuts (one at each corner) to fasten the cabinet to a structural support (bar joist, concrete slab or timber framing). See Fig. 4.

NOTES:

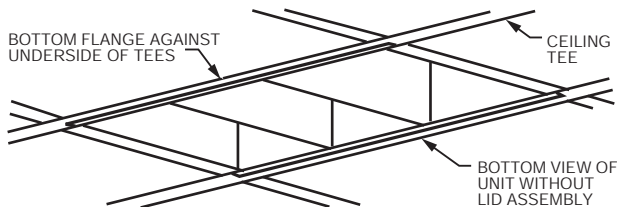
- All external hardware is furnished by the installer.
 - When using the suspension system of mounting, be sure to include a means for leveling adjustment after installation.
 - Never rest the air cleaner on the T-bar.
5. Level the air cleaner.
 6. Install two ultraviolet base modules on the sides of the F111U cabinet using the two no.10 x 2 in. phillips head sheet metal screws provided (predrilled holes for the mounting screws are provided on the cabinet).
 7. Tighten the screws securely (12 to 14in-lb) to seal the space between the base and the cabinet.
 8. Connect the UV base module power cords to the connectors provided in the side of the F111U.



OR USING OPTIONAL "Z" BRACKETS



NOTE:
FASTEN SECURELY TO STRUCTURAL SUPPORT SYSTEM, I.E. BAR JOIST, CONCRETE SLAB OR TIMBER FRAMING.



M10892

Fig. 4. Fasten cabinet to a structural support.



CAUTION

**Breakable Glass Hazard.
Can cause personal injury.**

Be careful when inserting lamps(s) into lamp base. Wear protective gloves when handling lamp(s).



MERCURY NOTICE

This device contains mercury in the sealed ultraviolet lamp(s).

Do not place your used lamp(s) in the trash. Dispose of properly.



CAUTION

**Broken Lamp Cleanup Hazard.
Do not use household vacuum cleaner.**

Sweep debris into a plastic bag and dispose of properly.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of old lamp(s).

9. Insert the lamp into the UV base module with the lamp light indicator at the five o' clock position. Do not touch the lamp surface with your hands. Fully insert the ultraviolet lamps into the base modules.
10. Rotate the lamp clockwise until it snaps into place with the lamp indicator light aligned with the raised button on the unit grill.
11. Install the high-efficiency main filter. Note airflow direction arrows if present. Install the filter with the direction arrow pointing towards the motor / blower.
12. Lock and secure the high-efficiency particle filter into place by closing both latches.

IMPORTANT

Do not touch the pleated filter media. Handle only the filter frame to prevent damage to the filter media.

13. Install the prefilter in the air cleaner grill. Note the air flow direction arrows and install the filter with arrows pointing towards the high-efficiency main filter.

Remote 3 Speed Wall Switch

The Remote Wall Switch Assembly allows control of the F111U model air cleaners from a location separate from the air cleaner. The assembly includes a remote switch with an outlet box cover, outlet box, extension ring, and a wire harness. Wiring to connect the remote switch and air cleaner must be furnished separately. More detailed instructions included with the Remote 3 Speed Wall Switch.

CAUTION

- This installation to be performed only by a qualified installer.
 - All wiring to comply with local electrical codes.
 - Disconnect power to air cleaner at fuse or breaker before beginning work. Failure to do so can result in shock hazard endangering equipment and personal safety of installer.
 - Only one air cleaner can be connected to a remote switch
1. Disconnect power to air cleaner.
 2. Mount 4" x 4" outlet box at desired remote location.
 3. Attach 3/4" extension ring to outlet box.
 4. Run six conductor, color-coded, 18-gauge wires from the remote switch location to the air cleaner.
 5. Use four wire nuts to connect four color-coded, lead wires on the remote switch to four color-coded wires from the air cleaner. (Red, Blue, Violet, Brown)
 6. Use one wire nut to connect white color-coded, lead wire from the air cleaner to single color-coded wire from the power supply. (White)

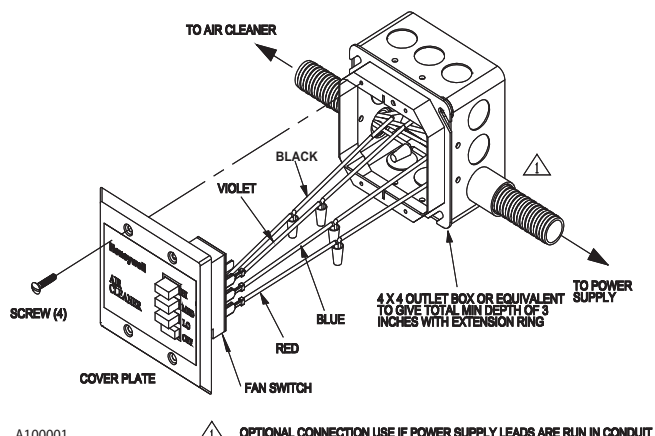


Fig. 5. Wiring 3-Speed Remote Switch

7. Connect the ground wire from the power supply to a ground stud of the outlet box. (Green)
8. Connect the ground wire from the air cleaner to the ground stud of the outlet box. (Green)
9. Use one wire nut to connect the black color-coded, lead wire on the remote switch to the black color-coded wire from the power supply.
10. Fold wires into box and mount remote switch on outlet box. Leave switch in OFF position.
11. On the air cleaner remove two screws on wiring compartment cover and open
12. Run six conductor, color coded, 18 gauge wires from the remote switch through the air cleaner access opening into the wiring compartment. Strip ends of remote switch lead wires
13. Connect four wires on air cleaner to remote switch lead wires with wire nuts following color code used at remote switch. (Red, Blue, Violet, Brown)
14. Connect one wire on air cleaner to power supply wire with a wire nut following color code used at remote switch. (White)
15. Connect the ground wire from the remote switch to a ground stud of the wiring compartment cover.(Green)

16. Fold wires into wiring compartment. Replace wiring compartment cover.
17. Turn on power to air cleaner at fuse or breaker.
18. Check operation by turning air cleaner at HIGH, MEDIUM, and LOW. Note that only the remote switch will operate the air cleaner.

Lid Assembly

The F111U lid is held in place by two separable hinges, two spring loaded plungers, and a safety catch. To install the spring loaded plungers on the lid follow these steps:

1. Pull the plunger back and twist a quarter turn to reveal the wrench flat on the body of the spring loaded plunger (see Fig. 6).
2. Turn the threaded barrel out of the spring plunger.
3. Insert the threaded barrel through the hole in the lid and turn the spring loaded plunger onto it.
4. Tighten the assembly with wrenches.
5. Repeat steps 1 through 4 for the second plunger.
6. Install the lid to the air cleaner, positioning the lid in the open position and engaging the hinge pins. Then move the lid to the side to fully engage the hinge pins.
7. To secure lid to air cleaner, slide safety catch to on position.
8. Swing the lid to the closed position and pull back on the spring loaded plungers, then releasing to lock them into place.
9. Verify that the lid is securely attached at the hinge pins and at the spring loaded plungers.

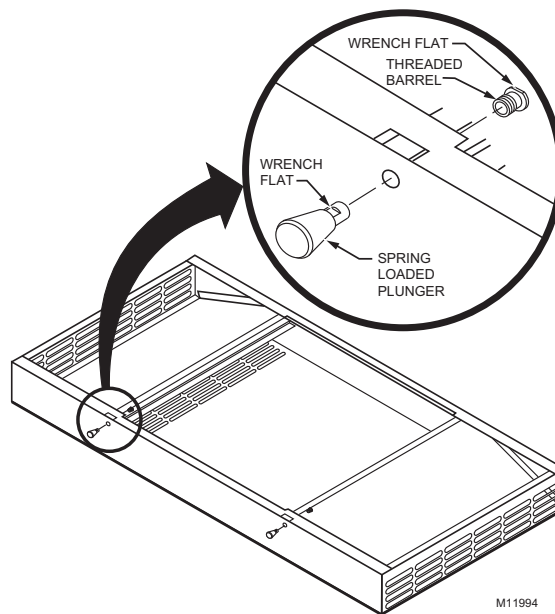


Fig. 6. Lid assembly.

WARNING

UV Light Hazard.

Accidental exposure to UV light can cause temporary or permanent loss of vision.

F111U lid is designed to operate an interlock switch to prevent UV light operation if lid is not correctly installed. Do not attempt to override the interlock switch.

Opening/Closing the Lid

To open the lid, pull the spring loaded plungers back to disengage the plunger. Carefully swing the lid open on the hinges while supporting the filter. To close, swing the lid into the closed position and engage the plungers.

Removing /Replacing the Lid

IMPORTANT

The lid is heavy. Make sure that it is supported before removing.

To remove the lid, swing it into the open position. Slide safety catch to off position. Move the lid to the side to disengage the hinge pins. Reverse the procedure to replace the lid. Make sure safety catch is in safe (on) position.

OPERATION

The F111U In-Ceiling Media Air Cleaner has been engineered to improve indoor air quality for health care, commercial, and industrial applications. The filters are the most practical and effective filtering system for removing atmospheric dust, pollens, bacteria, viruses, mold spores, smoke, and other airborne contaminants. Refer to Fig. 7.

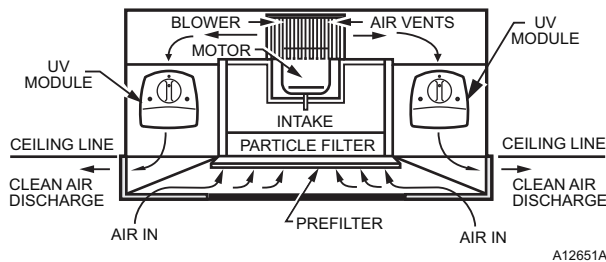


Fig. 7. F111U Series air cleaner operation.

The air cleaner is either operating (high, medium, or low) or off. Even when the area is unoccupied, the air cleaner can be operated continuously to prevent buildup of airborne contaminants.

The minimum recommended air exchange rate is 2.5 times per hour. In a heavily contaminated area, up to 15 air exchanges per hour (for example health care applications) can be necessary. The factors that determine what the rate of air exchange should be are:

- generation rates of the various pollutants;
- concentration level of the pollutants;
- desired contamination reduction level.

Airborne contaminants will always be present in the air where contaminant generations take place. Air cleaning systems and ventilators do not eliminate airborne contaminants, they reduce the excessive accumulation of the contaminants. To eliminate the contamination, the source of contamination must be removed.

Local, Federal and professional ventilation engineering standards and codes prescribe minimum ventilation rates to dilute air contamination in specific applications. The ventilation rates usually assume the injection of outdoor air or conditioned air (HVAC) measured as air exchange rate. The use of the F111U air cleaner to comply with ventilation requirements is an acceptable alternative to ventilation with outdoor air. However, at least 20% of a specified ventilation rate or code must be derived from outdoor air or conditioned air. The F111U air cleaner filtered and recirculated air can be the remaining 80%.

Verify F111U Operation

1. Turn on power to the Air Cleaner and check for proper operation for 2 to 3 minutes.
2. Listen for a smooth, powerful blower sound and air discharging from both ends of the air cleaner.
3. The installer should verify that the ultraviolet lamps are operating by viewing the lamp indicator on the lamp knob.

IMPORTANT

Do not attempt to look directly into the unit to see the illuminated ultraviolet lamps.

SERVICE



CAUTION

Electrical Hazard.

Can cause personal injury or equipment damage. Turn off power before installing or servicing the air cleaner.

IMPORTANT

Be sure to change filters as recommended to prevent reduced airflow in the air cleaner. Stand on a stable platform when working with the air cleaner.



CAUTION

All Filters must be provided from Air-Pure Systems to maintain U.L. Certification and Warranty.

The high-efficiency particle filter life ranges from 6 to 24 months with 12 to 24 months as an average. More frequent replacement may be necessary in some applications depending on the load of the filter.

Prefilter

The disposable prefilter collects large dust particulates and lint- type airborne fibers. Check the filter every two weeks to determine the replacement frequency. The filters need replacement when a pulsing sound occurs.

1. Slowly open the lid, supporting the lid so the filters do not fall out.
2. Remove the dirty prefilter.
3. Install the new prefilter in the air cleaner lid noting direction of airflow arrow.
4. Close and latch the lid.

High Efficiency Particle Filter

The high efficiency particle filter collects particulates that pass through the prefilter. The filter life is typically from 1 to 2 years. There is decreased air quality and a pulsing sound when the filter is filled with contaminants. The filter must be replaced when the pulsing sound is noticed.

NOTE: The filter must be replaced. Washing, vacuuming or reverse air blasting does not clean it.

1. Slowly open lid, supporting it so the filters do not fall out.
2. Open both filter securing latches with both hands. Slide the filter toward you.
3. Place spent filter in a plastic trash bag and dispose of properly.
4. Inspect the motor brackets for loose fasteners and tighten as necessary.
5. Install the new filter noting the direction of airflow arrow.

IMPORTANT

Do not touch the pleated filter media. Handle only the filter frame to prevent damage to the filter media.

6. Lock and secure the high efficiency particle filter into place by closing both latches.
7. Close and latch the lid.

Servicing UV Lamps



CAUTION

**Breakable Glass Hazard.
Can cause personal injury.**

Be careful when inserting lamps(s) into lamp base. Wear protective gloves when handling lamp(s).



MERCURY NOTICE

This device contains mercury in the sealed ultraviolet lamps(s). Do not place your used lamp(s) in the trash. Dispose of properly.

Broken Lamp Cleanup.

Do not use a household vacuum.

Sweep debris into plastic bag and dispose of properly.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of old lamp(s).



CAUTION

UV Lamp Burn Hazard.

Harmful to bare skin.

Can cause severe burns.

Allow lamps to cool 15 minutes before servicing.

Replace the lamps every 12 months to maintain peak performance:

1. Disconnect power to Air Cleaner.
2. Allow lamps to cool for 15 minutes before servicing.
3. Rotate lamp knob counterclockwise and gently pull knob to remove lamp.
4. Fully insert new lamp into base unit with lamp light indicator at five o'clock position. *Do not touch lamp surface with your hands.*
5. Rotate lamp clockwise until it snaps into place with lamp indicator light aligned with raised button on unit cover.
6. Connect power to Air Cleaner. Verify that ultraviolet lamps are operating by viewing lamp indicator on lamp knob. Do not attempt to look directly into unit to see illuminated ultraviolet lamps.

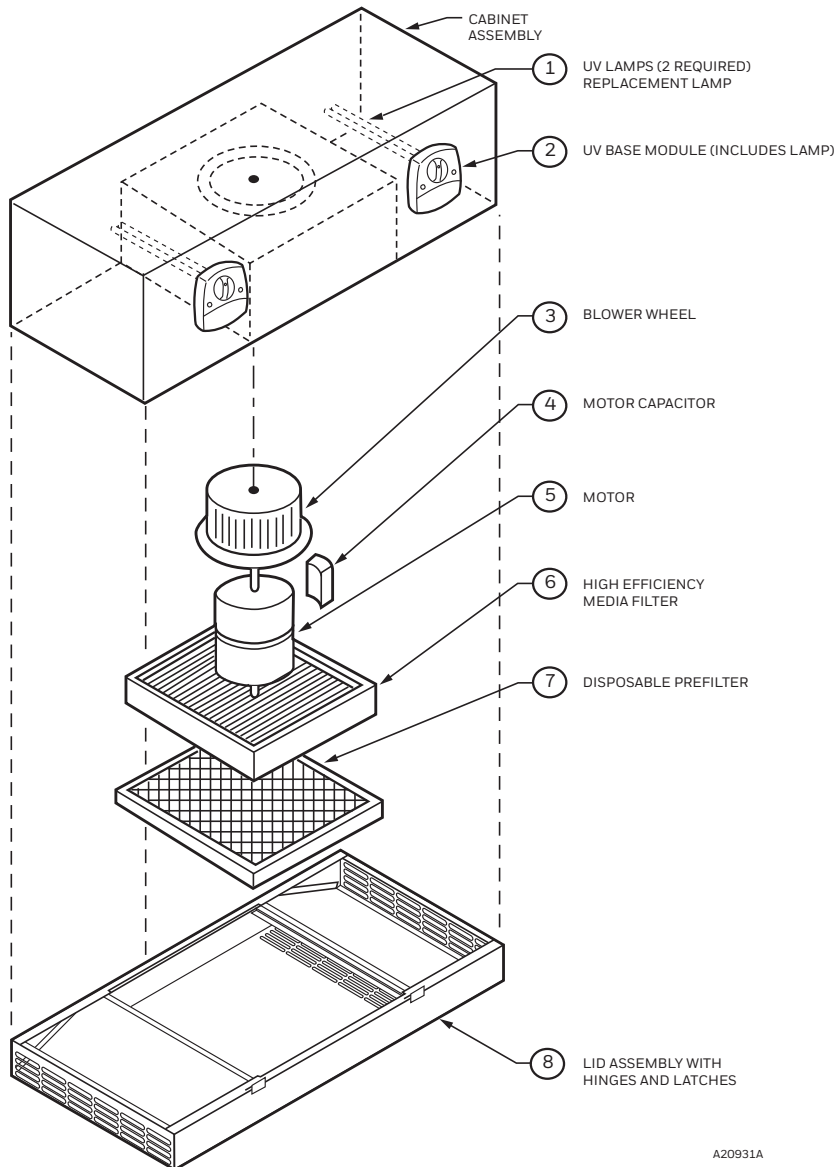
NOTE: The lamps are the only field-serviceable parts in the UV lights.

PARTS LIST

Refer to Fig. 8 and Table 3 for replacement part information.

Table 3. Replacement Parts.

Fig. Reference No.	Description	Pack Qty	Order Number
1	Replacement UV Bulb (requires 2)	—	—
2	UV Base Module (includes handle and bulb)	—	—
3	Blower wheel, Series 3	—	—
4	Motor capacitor; 120V, 60 Hz, Series 3	—	—
5	Motor; 120 V, 3-Speed, 60 Hz, Series 3	—	—
6	99.97% HEPA media filter, 4.5", Series 3	1	32000204-002
	95% hospital grade filter (MERV 16)	1	32000203-001
	95% ASHRAE particle filter (MERV 12)	1	50004739-001
7	Prefilter (disposable)	12	32002307-001
8	Lid assembly with hinges, latches, and actuator in White Color,	—	—



A20931A

Fig. 8. Exploded view of F111U Series 3 In-Ceiling Media Air Cleaner components.

F111U IN-CEILING MEDIA AIR CLEANER WITH ULTRAVIOLET AIR TREATMENT SYSTEM

Honeywell Building Technologies

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