

ISOLATE, INC.

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SPECIFICATION FOR SELF CONTAINED ABOVE-THE-CEILING FAN POWERED UVC-HEPA AIR FILTRATION UNIT – ISO–UVC/HEPA HORIZONTAL SERIES

A. ACCEPTABLE MANUFACTURER:

1. Isolate, Corp. 713-937-9393
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B. DESIGN AND PERFORMANCE CRITERIA:

1. Air purification's systems, as scheduled, shall be capable of effectively removing particulate contaminants from outside or recirculated air. The operation of the air purification system shall include a combination 99.97% efficient high efficiency HEPA air filter (to 0.3 micron particle size) for particulate capture and a high intensity ultraviolet (UVC) fixture for disinfection of microbiological airborne contaminants.
2. The unit manufacturer shall be able to submit a genuine third-party performance test by an independent and nationally recognized biological or health center laboratory normally engaged in biological testing. Destruction and removal of bacillus spores from circulated air must be demonstrated for both wet and dry spores. Test bacterium shall include bacillus megaterium, bacillus cereus, bacillus atrophaeus, bacillus thuringiensis and bacillus stearothermophilus.

Testing must demonstrate that with a six log challenge, at least a five-log reduction in microorganisms, i.e., kill by the UVC fixture, is possible at the unit inlet side of the HEPA filter for any of the challenge bacillus. Cultures must be made by swabbing the inlet of the filter. In all cases, a "no-growth" plate down stream of the HEPA filter must in fact demonstrate "no microorganism growth."

3. The air flow capacity of the unit shall be a nominal 500 cfm for a UVC/HEPA-500 unit and a nominal 1000 cfm for a UVC/HEPA-1000 unit.
4. The particulate phase shall consist of a single stage UL Class 2, 99.97% efficient at 0.3 microns HEPA element, meeting ASHRAE Test Standard 52-76.

5. HEPA disinfection shall be provided by a UVC fixture and shall be a high intensity, single ended type, suitable for installation in a cold or moving air stream.
6. The UVC fixture shall be installed in the unit, immediately upstream of the HEPA element, in order to provide maximum opportunity to irradiate any organisms or particulate that is captured by the HEPA element. The UVC/HEPA element must be changed by the buyer's maintenance department after 9,000 hours of continuous operation, i.e., typically at least one (1) time per year, in order to maintain maximum disinfection capacity.

C. GENERAL:

1. The air filtration unit shall be a factory fabricated, single-piece unit, with integral housing structure fabricated from brushed aluminum double wall housing panels and designed for above the ceiling use.. The unit shall be designed for horizontal air flow (above the ceiling design) for building recirculation air filtration or with direct connection to a standard roof or duct mounted exhaust fan for exhaust duty. The air filter unit shall include an all aluminum structural framework and integral housing structure with all aluminum housing panels to minimize weight.
2. The unit air intake shall be at one end. The unit shall include one (1) 12" diameter suction inlet for above the ceiling use.
3. Next, the UVC fixture shall be installed, immediately upstream of the HEPA filter.
4. Following the UVC fixture, a 99.97% efficient HEPA element, UL Class 2, meeting ASHRAE Test Standard 52-76 shall be installed. This HEPA element provides the high efficiency air filtration barrier and permits the UVC element to irradiate and destroy captured bio organisms.
5. A 120/1/60 backwardly inclined plenum type centrifugal fan shall follow the filter elements.
6. The structural aluminum extrusion framing system shall be as provided by Modular Framing Systems, Inc. The framing system assembly shall be accomplished using structural members and mechanical fasteners. (Welding is not necessary and not recommended). Precision molded fiberglass corners (three-way) joining elements shall be used to connect the perimeter enclosure framing (profile) members. Vertical and horizontal wall, roof, and floor supports, or "omega" extrusions, shall be incorporated and spaced to enable the finished enclosure to withstand the system design static pressures as listed on the equipment schedule.

Structural framing profiles and omega supports shall be extruded from 6063 alloy T5 temper aluminum as a minimum.

7. The unit manufacturer shall provide a double wall panel casing system.
8. The HEPA element is cylindrical type, a 99.97% efficient at 0.3 micron particle size. The UVC fixture is designed to be inserted through the end cap of the HEPA cartridge, yielding uniform irradiation of the inside (capture side) of the element. The HEPA cartridge and UVC fixture are an integral assembly, and the combined part number is changed once per year, i.e., the life of the UVC lamp is approximately 12-15 months.
9. A 120/1/60 ECM motorized impeller, backwardly inclined plenum type centrifugal fan(s) shall follow the HEPA filter cartridge.
10. Panels shall be joined together with a neat and clean appearance. Any safing, internal partitions, or other tie-ins to the casing shall be made using internal support angle extrusions or panels that are a part of the casing. Such members may be bolted, screwed, or riveted to or through the support structure.
11. One (1) 12" diameter supply outlet (air discharge) is recommended for the customer supplied flexible duct connection to recirculation ductwork or exhaust system ductwork, whichever the case.
12. Suction inlet connections shall be on one end of the unit with the supply outlet located on the other end for straight through airflow.
13. Air filters and unit internal components shall be suitable for side or bottom access for horizontal (above the ceiling installation) and front and side access for vertical (portable unit) installation.

D. UNIT CONSTRUCTION:

1. Housing construction
 - a) The unit housing shall be double wall construction of all aluminum structure and panels, as described above.
 - b) HEPA filter elements and UVC fixtures shall be side servicing via access panels provided with door latches for easy entrance.
 - c) Wall panels shall be sealed against leakage up to a 2" w.g. Silicone sealant, gaskets, or other appropriate pressure sealing means are acceptable for housing sealing use.

- d) Panels that are not normally removed for maintenance shall be secured using a “stopper” aluminum wedge member designed to be compatible with the Modular Framing Systems, Inc., aluminum framework.
- e) HEPA elements are sealed to the filter inlet plate using a compression gasket and bar clamp means. The bar clamp provides a compressive force to the filter gasket via threaded rods and wing nut / lock washer hardware.

2. Filtration Requirements

- a) Cylindrical elements as described above shall be used.
- b) Filter elements shall be factory installed in the unit prior to shipment.

3. System Airflow Requirements

- a) The unit shall include an ECM motorized impeller, backwardly inclined centrifugal fan(s) to produce a minimum of either 500 or 1000 cfm, depending on the unit model number and capacity, with a system airflow against an external (duct) static pressure of 0.25” w.g.
- b) The unit fan shall operate off of 120/1/60 input power and include an on-off switch.
- c) The unit fan shall be installed after the HEPA filter.

4. Electrical Requirements

- a) The unit shall be factory wired with on-off switch to an internal unit junction box or power cord with plug, for ease of contractor connection in the field.
- b) The unit shall operate on 120/1/60, and include a 0-10 volt DC potentiometer that provides a variable speed control for air volume selection.
- c) Each unit shall be fully factory tested prior to shipment.
- d) An aluminum nametag shall be provided with unit model number, serial number, operating amps and electrical input requirements.

- e) A unit electrical wiring diagram shall be provided with each unit.
- f) All wiring shall be in accordance with the latest version of the National Electric Code.

E. DIMENSIONAL REQUIREMENTS:

- 1. Due to building and air handling unit dimensional constraints, the air filtration unit housing shall not exceed the dimensions as shown on the unit drawing.
- 2. Filtration units shall be suitable for mounting above the drop ceiling and installed via 5/16" diameter trapeze hanger rods with nylon lock-nut fasteners. Trapeze hangers and rods are by the installing contractor.
- 3. Access to the unit internal filters and components shall be achieved via the access panels provided and shown on the unit drawings.

F. OPTIONAL FEATURES:

- 1. Supply a Model H800 current switch for use in remote indication.
- 2. Supply one spare UVC/HEPA element, either a:
 - Model UVC/HEPA-500 Series Replacement #12R.
 - Model UVC/HEPA-1000 Series Replacement #24R.

G. WARRANTY

- 1. Isolate units are warranted against defects in material and workmanship for a period of twelve (12) months from date of commissioning or fifteen (15) months from date of shipment, whichever occurs first.