

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and Divisions 00 and 01, apply to this Section.

1.2 SUMMARY

- A. This Section includes factory-fabricated air-filter devices and media used to remove particulate matter from air for HVAC applications.

1.3 DEFINITIONS

- A. HEPA: High-efficiency particulate air.
- B. MERV: Minimum Efficiency Reporting Value.

1.4 SUBMITTALS

- A. Product Data: Include dimensions; shipping and operating weights; required clearances and access; rated flow capacity, including initial and final pressure drop at rated airflow; MERV ratings, fire classification; furnished specialties; and accessories for each model indicated.
- B. Shop Drawings: Include plans, elevations, sections, and details to illustrate component assemblies and attachments.
 - 1. Show filter rack assembly, dimensions, materials, and methods of assembly of components.
 - 2. Include setting drawings, templates, and requirements for installing anchor bolts and anchorages.
- C. Maintenance Data: For each type of filter and rack to include in maintenance manuals specified in Division 01.

1.5 CODES AND STANDARDS

- A. Codes and Standards shall be the current version adopted by the Authority Having Jurisdiction.

1.6 QUALITY ASSURANCE

- A. Comply with NFPA 90A and NFPA 90B.
- B. ASHRAE Compliance: Comply with provisions of ASHRAE 52.2 1999 for method of testing and rating air-filter units.
- C. Provide air filter units which have been listed and labeled by UL (Underwriters Laboratories).

1.7 COORDINATION

- A. Coordinate size and location of filter banks with other trades to verify adequate clearances for filter, installation, maintenance and replacement. Coordinate size and location of concrete

housekeeping pads required to support filter banks. Concrete, reinforcement and frame work requirements as specified in Division 03, Section "Cast-In-Place". Provide anchor-bolt inserts cast into all bases.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Provide one complete set of filters for each filter bank. Refer to Section 15050 for additional filter quantity requirements.

PART 2 – PRODUCTS

2.1 EXTENDED-SURFACE, DISPOSABLE PANEL FILTERS (PRE-FILTER)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Filters and Filter-Holding System:
 - a. AAF International.
 - b. Camfil/Farr Co.
 - c. Flanders Filters, Inc.
 - d. Clarcor-Air, Purolator or Airguard.
 - e. Or Approved Equal.
- B. Description: Factory-fabricated, dry, extended-surface filters with holding frames.
- C. Media: High-loft, non-woven cotton/synthetic blend.
- D. Media Support: Diamond-shaped expanded metal.
- E. Pleat Design: Radial pleat.
- F. Frame: Moisture-resistant beverage board.
- G. Minimum MERV rating: 8.

2.2 EXTENDED-SURFACE, RIGID STYLE CARTRIDGE BOX FILTERS (FINAL FILTERS)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Filters and Filter-Holding System:
 - a. AAF International.
 - b. Camfil/Farr Co.
 - c. Flanders Filters, Inc.
 - d. Clarcor-Air, Purolator or Airguard.
 - e. Or Approved Equal.
- B. Description: Factory-fabricated, dry, extended-surface filters with holding frames.

- C. Media: High-loft, microfine glass or synthetic blend.
- D. Media Support: Expanded metal grid with pleat separators.
- E. Enclosure Frame: 24-gauge galvanized steel.
- F. Minimum MERV rating: 14.

2.3 ACTIVATED-CARBON PANEL FILTERS (GAS ABSORPTION PHASE FILTERS)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Gas Absorption Phase Filters:
 - a. Filtration Group.
 - b. Flanders.
 - c. Clarcor-Air, Purolator or Airguard.
 - d. Purafil.
 - e. Or Approved Equal.
- B. Description: Factory-fabricated unit with activated-carbon media.
- C. Media: Flat-panel, multilayer filter with inlet layer of polyester fibers, layer of activated-carbon granules bonded to fibers, layer of polyurethane foam, and housed in cardboard frame.
- D. Media: Pleated, multilayer filter with inlet layer of cotton and synthetic fibers and layer of activated-carbon granules bonded to synthetic fibers, formed into deep-V-shaped pleats and held by self-wire grid, and housed in nonflammable cardboard frame.

2.4 ACTIVATED-CARBON FILTERS (GAS ABSORPTION PHASE FILTERS)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Gas Absorption Phase Filters:
 - a. Filtration Group.
 - b. Flanders.
 - c. Clarcor-Air, Purolator or Airguard.
 - d. Purafil.
 - e. Or Approved Equal.
- B. Description: Factory-fabricated unit with activated-carbon trays in deep-V arrangement with disposable panel prefilter.
- C. Media: Activated carbon and mounted in removable carbon-cell trays of epoxy-coated steel.
- D. Activated-Carbon Capacity: 12 lb of activated carbon per 500 cfm of airflow.
- E. Activated-Carbon Capacity: 8.8 lb of activated carbon per 2000 cfm of airflow.

- F. Housing: 0.064-inch thick, galvanized steel, for side servicing through gasketed access doors on both sides. Equip housings with metal slide channel tracks to hold activated-carbon trays.

2.5 HEPA FILTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Filters and Filter-Holding System:
 - a. AAF International.
 - b. Camfil/Farr Co.
 - c. Flanders Filters, Inc.
 - d. Clarcor-Air, Purolator or Airguard.
 - e. Or Approved Equal.
- B. Description: Factory-fabricated HEPA filters with holding casing.
- C. Media: UL 586, fibrous glass, constructed of continuous sheets with closely spaced pleats with aluminum separators.
- D. Frame Material: Galvanized steel.
- E. Frame Material: Stainless steel.
- F. Media to Frame Side Bond: Silicone.
- G. Face Gasket: Neoprene expanded rubber.
- H. Face Gasket: Silicone.
- I. Duct-Mounting Frames: Construct downstream corners of holding device with cushion pads to protect media. Provide bolted filter-sealing mechanism to mount and continuously seal each individual filter.

2.6 FRONT- AND REAR-ACCESS FILTER FRAMES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Filters and Filter-Holding System:
 - a. AAF International.
 - b. Camfil/Farr Co.
 - c. Flanders Filters, Inc.
 - d. Clarcor-Air, Purolator or Airguard.
 - e. Or Approved Equal.
- B. Framing System: Aluminum framing members with access for either upstream (front) or downstream (rear) filter servicing, cut to size and prepunched for assembly into modules. Holding frames constructed of 16-gauge galvanized steel minimum. Equip with polyurethane foam sealing gaskets and filter centering dimples. Filter fasteners shall be capable of being

installed without tools or additional nuts and bolts. Provide vertical stiffeners for filter assemblies over 3 frames high.

- C. Prefilters: Incorporate a separate track, removable from front or back.
- D. Sealing: Factory-installed, positive-sealing device for each row of filters to ensure seal between gasketed filter elements to prevent bypass of unfiltered air.

2.7 SIDE-SERVICE HOUSINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Filters and Filter-Holding System:
 - a. AAF International.
 - b. Camfil/Farr Co.
 - c. Flanders Filters, Inc.
 - d. Clarcor-Air, Purolator or Airguard.
 - e. Or Approved Equal.
- B. Description: Side access housing constructed of 16-gauge galvanized steel. Access doors on both sides; weatherproof housing.
- C. Prefilters: Integral tracks to accommodate 2-inch disposable filters. Prefilters serviceable without disturbing final filters.
- D. Access Doors: Continuous gaskets on perimeter and positive-locking devices. Arrange so filter cartridges can be loaded from either access door.
- E. Sealing: Incorporate positive-sealing gasket material on channels to seal top and bottom of filter cartridge frames to prevent bypass of unfiltered air.

2.8 FILTER GAGES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Filter Gages:
 - a. Airguard Industries, Inc.
 - b. Dwyer Instruments Inc.
 - c. Or Approved Equal.
- B. Description: Diaphragm type with dial and pointer in metal case, vent valves, black figures on white background, and front recalibration adjustment.
 - 1. Diameter: 4-1/2 inches.
 - 2. Range: 0- to 2.0-inch wg.
- C. Accessories: Static-pressure tips, tubing, gage connections, and mounting bracket.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install filter frames according to manufacturer's written instructions.
- B. Install filters and housings in position to prevent passage of unfiltered air.
- C. Install filter gage for each filter bank (except terminal units).
- D. Install filter gage static-pressure tips upstream and downstream from filters to measure pressure drop through filter. Mount filter gages on outside of filter housing or filter plenum in an accessible position.
- E. Position each filter unit with clearance for normal service and maintenance. Anchor filter holding frames to substrate.
- F. Coordinate filter installations with duct and air-handling unit installations.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components, filter and filter-frame installation. Report results in writing.
- B. HEPA Filters: Pressurize housing to a minimum of 3.0-inch wg or to designed operating pressure, whichever is higher; and test housing joints, door seals, and sealing edges of filter with soapy water to check for air leaks.
- C. HEPA Filters: Pressurize housing to a minimum of 3.0-inch wg or to designed operating pressure, whichever is higher; and test housing joints, door seals, and sealing edges of filter for air leaks according to ASME N510 pressure-decay method.

3.3 CLEANING

- A. After completing system installation and testing, adjusting, and balancing air-handling and air-distribution systems, clean filter housings and install new filter media.

END OF SECTION