



# Division 234000

# HVAC Air Cleaning Devices

## DESIGN GUIDE

## 1 General

### 1.1 General

- A. Filter sizes in air handling unit equipment shall be standard sizes- 24"x24" or 24"x12".
- B. All filters shall be disposable. Washable and cleanable filters are not allowed.
- C. All supply systems shall have a minimum MERV 13 Filtration
- D. The mechanical documents shall indicate filter efficiency.

## 2 Materials

### 2.1 Pre-Filters

- A. Disposal, Extended Area Panel Filters
  - 1. UL 900 Class 2 media, pleated, lofted, non-woven, reinforced cotton and synthetic fabric, supported and bonded to welded wire grid; rigid, heavy-duty frame, high wet strength beverage board ASHRAE 52 rated
  - 2. 25 to 30 % dust spot efficiency; 90 to 92 % weight arrestance, Merv 8
  - 3. 2" thick, 0.31" APD initial resistance at 500 FPM



## 2.2 Final Filters

- A. Extended Surface High Efficiency Media Filters
  - 1. UL 900 Class 2 pleated media, water-resistant glass fiber with welded wire support grid; 16-gauge steel holding frame with corrosion resistant coating; ASHRAE 52 rated
  - 2. 80 to 85 % efficiency; 98 % arrestance, MERV 13
  - 3. 12" thick, 0.5" APD initial resistance at 500 FPM
- B. Disposable, Extended Area Panel Filters
  - 1. Use when equipment is not offered with 12" deep filters
  - 2. UL 900 Class 2 media, pleated, lofted, non-woven, reinforced cotton and synthetic fabric, supported and bonded to welded wire grid; rigid, heavy-duty frame, high wet strength beverage board ASHRAE 52 rated
  - 3. 80 % to 85 % dust spot efficiency, Merv 13.
  - 4. 4" thick, 0.35" APD at 500 FPM

## 2.3 Terminal Unit Filters

- A. Terminal units such as fan coils shall have a minimum of MERV 13 filtration.
- B. Disposal, Extended Area Panel Filters
  - 1. UL 900 Class 2 media, pleated, lofted, non-woven, reinforced cotton and synthetic fabric, supported and bonded to welded wire grid; rigid, heavy-duty frame, high wet strength beverage board ASHRAE 52 rated
  - 2. 80 % to 85 % dust spot efficiency, Merv 13.
  - 3. 2" thick, 0.41" APD at 500 FPM



## 2.4 Filter Frames

### A. Equipment

1. Smaller equipment in 237300 shall utilize glide pack frames that allow filters to be removed on a slide rail and shall be complete with housing, access doors, tracks, holding frames.
2. Larger equipment in 237300 that is large enough for standing access may have front loaded filters.
3. Frames
  - a. Single stage filters shall accommodate filters up to 6" deep.
  - b. Two stage filter systems shall accommodate a 2" filter and a 12" final filter.
  - c. Some equipment with two stage filter systems that cannot accommodate a 12" final filter shall accommodate a 2" pre-filter and 4" final filter.

### B. Duct Filter Frames

1. These shall be fabricated by equipment supplier who issues regular published literature and not by the contractor.
2. Leakage: less than 1 % at 3 inches WG.
3. Housing: 16-gauge galvanized steel.
4. Flanges for connection to ductwork.
5. Access doors: 16-gauge galvanized steel with adjustable and replaceable positive sealing latches and replaceable hinges with high memory neoprene peripheral gasket and polyurethane foam gasket at the door.
6. Tracks shall accommodate holding frame.
7. Holding frame shall accommodate standard size filters.



## 2.5 Filter Gauges

- A. Direct Reading Dial: 3½ inch diameter diaphragm actuated dial in metal case, vent valves, black figures on white background, front recalibration adjustment, range 0 to 2.0 inches WG, 2 % of full-scale accuracy.
- B. Accessories: Static pressure tips with integral compression fittings, ¼ inch tubing, 2-way or 3-way vent valves.

# 3 Execution

## 3.1 Installation

- A. Do not operate fan system until filters (temporary or permanent) are in place. Replace temporary filters used during construction and testing, with clean set.
- B. All units shall have filters located at the unit. Removal and/or replacement must be achieved easily and without damaging the filters. Mechanical rooms are the preferred location
- C. Provide filter gauges on filter banks at all air handling units installed with separate static pressure tips upstream and downstream of filters. (To be factory furnished with air handling unit.) Banks with pre and final filters shall have one (1) gauge with selector or 3-way valve.
  - 1. Unitary or packaged equipment with filters do not require gauges unless noted.
- D. Terminal Unit filters are preferably placed in the terminal unit in an accessible location and not in return grilles in classrooms.

# 4 Appendix

## 4.1 Reserved for future.