

SECTION 23 41 00 – FILTERS USED IN HVAC SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes air filters used in HVAC systems.

1.2 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, and accessories for each type of filter.

1.3 QUALITY ASSURANCE

- A. Codes and Regulations
 - 1. Test method for all particulate filters: ASHRAE Standard 52.1-1992 and ASHRAE Standard 52.2-1999.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials: Fixed media type filters, general
 - 1. Prefilters
 - a. 24 inches by 24 inches by 2 inches thick, pleated media filter with 25 percent minimum dust spot efficiency (30 percent nominal efficiency, 96 percent arrestance) per ASHRAE Standard 52.1-1992 Test Method with synthetic atmospheric dust. Minimum efficiency reporting value (MERV) of 8 per ASHRAE Standard 52.2-1999.
 - b. American Air Filter Perfect Pleat Ultra, Purolator Mark 80, Filtration Group Series 400, or approved equal.
 - 2. Final filters (extended media bag type)
 - a. 24 inches by 24 inches by 24 inches deep bag type filters supported by galvanized wire frame; 80 percent minimum dust spot efficiency (85 percent nominal efficiency, 98 percent arrestance) per ASHRAE Standard 52.1-1992 Test Method with synthetic atmospheric dust. MERV 13 per ASHRAE Standard 52.2-1999.

- b. American Air Filter DriPak 2000, Purolator Serva-Pak S, Filtration Group SoniQ, or approved equal.

OR

3. Final filters (pleated media type)

- a. 12 inch deep rigid fixed pleated media type filters supported by galvanized wire frame; 80 percent minimum dust spot efficiency (85 percent nominal efficiency) (98 arrestance) per ASHRAE Standard 52.1-1992 Test Method with synthetic atmospheric dust. MERV 13 per ASHRAE Standard 52.2-1999.
- b. American Air Filter VariCel RF, Purolator Aero Cell, Filtration Group Rigid Cell, or approved equal.

4. Filter frames

- a. Stationary assembly built up of individual stationary filter frames, with gaskets and with latching devices to hold replaceable media and holding frame firmly in the stationary frame.
- b. The prefilters and final filters shall be installed in separate frames which allow the final filters to be replaced without having to remove the prefilters.
- c. Individual frames formed steel angle type made of steel, 16 gauge at least 3 inches deep, permanently assembled with solid rivets
- d. Where height or width exceeds 6 feet, provide stiffener of 16 gauge sheet metal with hemmed exposed edge, 8 inches wide, full height and width of filters on 6 foot centers.
- e. Finish of all metal parts of frame shall be hot-dip galvanized with additional high build epoxy finish 0.020 inch minimum thickness.
- f. Gasketing shall be included, with tight seal to filter face.
- g. Filter airflow resistance gauge: DWYER "Series 2000" or approved; 0 to 2 inch WC. range for final filters; 0 to 1 inch WC. range for pre filters.
- h. Initial resistance: Shall not exceed resistance scheduled.

B. Prefilter, fixed (pleated) media type filters, with cabinet

- 1. Manufacture: By a firm specified for fixed (pleated) media type filters, general
- 2. Filter media: Same as specified for 2 inch fixed (pleated) media type filters
- 3. Filter cabinets: Farr "Glide-Pack" cabinet or approved; 18 gauge metal filter casing, slide-in airtight sealing tracks; access doors, duct connected filter cabinet inlet and outlet
- 4. Filter airflow resistance gauge: Same as fixed (pleated) media type filters, general

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Temporary filter media: Install during supply system balancing in fixed filter media frames; upper limit resistance of temporary media to be 125 percent of combined initial design resistance across the fixed media filter sections.
- B. Final filters shall be installed after balancing and commissioning work is complete.
- C. Also provide a temporary filter in system when fan is in operation prior to balancing in order to keep the ductwork clean; resistance shall be as scheduled for permanent filters. Temporary filters shall be equivalent to permanent filters in style and media.
- D. Fixed media type filter frames: Assemble and install individual frames with rivets after placing 1-inch wide weather-stripping gaskets between filter frames. Seal filter frames to ductwork as specified under Sheet Metal Work. Provide one inch space between pre-filter bank and final filter bank for static pressure probe.
- E. Airflow resistance gauges: Connect gauges with copper tubing per manufacturer's recommendations; connections at gauge with a vent valve assembly to permit zeroing adjustments. Install a separate gauge across both the pre-filter and final filter, i.e., one across the pre-filter and one across the final filter.
- F. Filter access and clearance: Provide 2'-6" minimum access to filter bank that allows for replacement of filter elements, without the need for special tools. Provide clearance downstream of bag filters to preclude early bag failure from contact with structure. Provide a fixed catwalk for filter bank over 6' 0" tall.
 - 1. Combination of 2 inch pleated media pre filter and extended media bag filter shall have a maximum initial static pressure drop at 500 FPM of 0.38 inches and 0.39 inches w.g. respectively (must be approved by Owner's Representative).
 - 2. Heating and cooling coils shall be protected by a 2 inch pleated media.
 - 3. Where geometry or use dictates, pre-filters shall be cabinet-type.

END OF SECTION 23 41 00