

SECTION 23 82 40 – HYDRONIC CABINET HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes Cabinet heaters with centrifugal fans and hot-water coils.

1.3 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each product indicated.
- B. Samples for Initial Selection: Provide color charts, for units with factory-applied color finishes, for color selection by the Architect.
- C. Operation and Maintenance Data: For cabinet heaters.

1.4 QUALITY ASSURANCE

- A. Obtain all cabinet heater units through one source from a single manufacturer, regularly engaged in production of the units.

1.5 EXTRA MATERIALS

- A. In addition to the filter supplied with each cabinet heater, provide two extra set(s) of filters for all units installed on the project. When directed by the owner's representative, install both sets of filters if necessary. If additional filter installation is not required all filters shall be given to the owner as extra stock, at the completion of the project.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide cabinet heaters manufactured by Sigma.
- B. Cabinet heaters meeting the full requirements of the specifications including aesthetic properties, and manufactured by the following will be considered:
  - 1. Trane
  - 2. Sterling.
  - 3. Zehnder
  - 4. Rittling.

### 2.2 CABINET UNIT HEATERS

- A. Each unit shall include a cabinet, coil, fan wheel(s), fan casing(s), fan board, and motor(s). The fan board assembly shall be easily removable and include a quick-disconnect motor plug. The construction shall be minimum 18-gage galvanized steel, and continuous throughout the unit. The unit shall be acoustically and thermally insulated with closed-cell insulation. All panels are made rigid by channel forming.
  - 1. Vertical Cabinet and Slope Top Units: Front panel fabrication to be minimum 16-gage galvanized steel. All other panels are 18- gage galvanized steel. Hinged access door construction is 20-gage steel and is flush with top panel.
  - 2. Vertical Wall Hung Units: Front panel fabrication to be minimum 16-gage galvanized steel. All other panels are 18- gage galvanized steel. Side panels are removable for piping access.
  - 3. Horizontal Cabinet Units: All panels to be minimum 18-gage galvanized steel, including the bottom panel. The hinged access door is flush with front panel. Bottom panels ship with tamperproof screw fasteners and safety chain.
  - 4. Concealed/Recessed Units: Exposed panels on recessed units to be minimum 18- gage steel construction and ship separate from the unit. Bottom panels on horizontal recessed models ship with tamperproof screw fasteners and safety chain.
- B. Cabinet Finish: Refer to drawing schedules for finishes required for each cabinet heater. Provide units with one of the following finishes, as noted on the drawings:
  - 1. If the drawings indicate a "Primer" finish; provide a factory applied baked enamel primer.
  - 2. If the drawings indicate a "Standard" color; provide a factory applied baked enamel color, selected by the Architect from the manufacturer's standard color chart.
  - 3. If the drawings indicate a "Custom" color; provide a factory applied baked enamel in a custom color as selected by the Architect.
- C. Filters: Filters to be located behind an integral access door on horizontal type units. Filters to be 1" pleated media throwaway MERV 8.
- D. Hot-Water Coil: Hot water coils to be burst tested at 450 psig and leak tested at 100 psig under water. Maximum main coil working pressure to be 300 psig. Tubes and u-bends to be 3/8" OD copper. Fins to be aluminum and mechanically bonded to the copper tubes. Coil stub outs to be 5/8" OD copper tubing.
- E. Fans: Provide aluminum fan wheels to be centrifugal forward-curved and double-width. Fan wheels and housings to be corrosion resistant. Fan housing construction to be formed sheet metal.

- F. Motors: Provide brushless electronically commutated motors (ECM) factory programmed and run-tested in assembled units. The motor controller is mounted in a control box with a built-in integrated user interface and LED tachometer. Provide adjustment through momentary contact switches accessible without factory service personnel on the motor control board. Motors will soft-ramp between speeds to lessen the acoustics due to sudden speed changes. Motors can be operated at three speeds or with a field-supplied variable speed controller. The motor will choose the highest speed if there are simultaneous/conflicting speed requests. All motors have integral thermal overload protection with a maximum ambient operating temperature of 104°F and are permanently lubricated. Motors are capable of starting at 50 percent of rated voltage and operating at 90 percent of rated voltage on all speed settings. Motors can operate up to 10 percent over voltage.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas to receive cabinet heaters for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping and electrical connections to verify actual locations before unit heater installation. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Install cabinet unit heaters to comply with NFPA 90A. Suspend cabinet heaters from structure with elastomeric hangers.

#### 3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.
- C. Where required, connect supply and return ducts to cabinet unit heaters with flexible duct connectors specified in Division 23 Section "Air Duct Accessories."
- D. Unless otherwise indicated, install union, control valve, strainer and ball valve on supply-water connection and union, calibrated balancing valve and ball valve on return-water connection of unit heater.

#### 3.4 FIELD QUALITY CONTROL

- A. Perform field tests and inspections as required by the manufacturer. Provide test reports.
- B. Remove and replace malfunctioning units and retest as specified above.
- C. At the direction of the owner's representative, the contractor shall install the extra filters in the respective equipment. If no additional installation is required, the contractor shall forward, to the owner, all extra filters. When forwarding materials obtain a receipt for any materials forwarded.

END OF SECTION 23 82 40