

**SECTION 23 82 39
UNIT HEATERS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Cabinet unit heaters with centrifugal fans and electric-resistance heating coils.
- B. Wall and ceiling heaters with propeller fans and electric-resistance heating coils.

1.2 RELATED WORK

- A. Section 23 05 11, COMMON WORK RESULTS FOR HVAC: General mechanical requirements and items, which are common to more than one section of Division 23.

1.3 QUALITY ASSURANCE

- A. Refer to specification Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

1.4 SUBMITTALS

- A. Submit in accordance with specification Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- B. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories for each type of product indicated.

1.5 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. National Electrical Manufacturer's Association (NEMA):
70-2008.....National Electrical Code
- C. Underwriters Laboratories (UL):
UL 499.....Electric Heating Appliances

PART 2 - PRODUCTS

2.1 CABINET UNIT HEATERS

- A. Cabinet: Steel with baked-enamel finish in color selected by Architect.
 - 1. Vertical Unit, Exposed Front Panels: Minimum 1.35-mm (0.0528-inch) thick, sheet steel, removable panels with channel-formed edges secured with tamperproof cam fasteners.

2. Horizontal Unit, Exposed Bottom Panels: Minimum 1.35-mm (0.0528-inch) sheet steel, removable panels secured with tamperproof cam fasteners and safety chain.
 3. Recessing Flanges: Steel, finished to match cabinet.
 4. Control Access Door: Key operated.
 5. Base: Minimum 1.35-mm (0.0528-inch) thick steel, finished to match cabinet, 100 mm (4 inches) high with leveling bolts.
- B. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and hum, mounted in ceramic inserts in a galvanized-steel housing; with fuses in terminal box for overcurrent protection and limit controls for high-temperature protection. Terminate elements in stainless-steel machine-staked terminals secured with stainless-steel hardware.
- C. Fan and Motor Board: Removable.
1. Fan: Forward curved, double width, centrifugal; directly connected to motor. Thermoplastic or painted-steel wheels, and aluminum, painted-steel, or galvanized-steel fan scrolls.
 2. Motor: Permanently lubricated, multispeed; resiliently mounted on motor board. Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
 3. Wiring Terminations: Connect motor to chassis wiring with plug connection.
- D. Basic Unit Controls:
1. Control voltage transformer.
 2. Wall-mounted thermostat.

2.3 WALL AND CEILING HEATERS

- A. Description: An assembly including chassis, electric heating coil, fan, motor, and controls.
- B. Cabinet:
1. Front Panel: Stamped-steel louver, with removable panels fastened with tamperproof fasteners.
 2. Finish: Baked enamel over baked-on primer with color selected by Architect, applied to factory-assembled and -tested wall and ceiling heaters before shipping.
- C. Surface-Mounting Cabinet Enclosure: Steel with finish to match cabinet.

- D. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless-steel, machine-staked terminals secured with stainless-steel hardware, and limit controls for high temperature protection. Provide integral circuit breaker for overcurrent protection.
- E. Fan: Aluminum propeller directly connected to motor.
 - 1. Motor: Permanently lubricated, multispeed. Comply with requirements in Section 23 05 12 General Motor Requirements for HVAC Equipment.
- F. Controls: Low-voltage relay with transformer kit.
- G. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- A. Install wall boxes in finished wall assembly; seal and weatherproof.
- B. Install cabinet unit heaters to comply with NFPA 90A.
- C. Suspend cabinet unit heaters from structure with elastomeric hangers.

3.3 CONNECTIONS

- A. Ground electric convection heating units according to Section 26 05 26 Grounding and Bonding for Electrical Systems.
- B. Connect wiring according to Section 26 05 21 Low-Voltage Electrical Power Conductors and Cables.

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