

SECTION 23 82 19
ELECTRIC RESISTANCE DUCT HEATERS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this section.
- B. The General Requirements apply to the work of this section.

1.2 SCOPE

- A. Provide material, equipment, labor, and supervision necessary to electric resistance heaters in the duct system as required.

1.3 SUBMITTALS

- A. Submittal data shall consist of drawings showing coil dimensions, construction materials, watt density, ratings, and performance including pressure drops on airside.
- B. Furnish a separate, complete wiring diagram for each heater.
 - 1. Diagram shall include recommended supply wire gauges per NEC, and fuse sizes.
 - 2. Typical wiring diagrams are not acceptable.
 - 3. Each heater shall be complete with clearly marked power and control terminals.
- C. Verify control panel size, door swing and duct size with contractor supplied ductwork shop drawings prior to submittal, and ordering heaters.
 - 1. Verify electrical characteristics and control requirements prior to order.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. Acceptable Manufacturers
 - 1. Duct heating coils shall be Brasch, Indeeco, Markel, or Warren.
- B. Duct heaters shall be open coil heaters.
 - 1. Voltage, size, wattage, number of steps and control voltage shall be as scheduled on the drawings.
 - 2. Furnish three-phase heaters with balanced three-phase steps.
 - 3. Heaters shall be UL listed for zero clearance and meet all applicable requirements of the NEC.
- C. Type: Heaters shall be of the slip-in type for duct mounting.
- D. Elements shall be of 80% nickel and 20% chromium; steps arranged to prevent stratification when operating at less than full capacity.
 - 1. The maximum watts per square inch of wire surface shall be up to 150 HW=50.
- E. Coil terminals shall be of stainless steel, terminal insulators and bracket bushings shall be of ceramic and securely positioned.
 - 1. Terminals shall be machine crimped to coil.
- F. Frame shall be of sufficiently heavy gauge galvanized steel to assure structural rigidity and have vertical galvanized steel supports with stiffening ribs and gussets spaced no more than 4" apart, spot welded to the casing.
- G. Provide terminal box with solid hinged cover in order to minimize dust infiltration.
 - 1. Heater terminal box must be totally enclosed, must be without perforated or expanded sheet metal covers and insulated.
- H. Provide a recessed terminal box for coils installed in ducts with internal obstruction greater than 1" to assure that heating elements and safety controls are in the air stream.
- I. Orientation: Heaters shall be interchangeable for mounting in a horizontal or vertical duct.

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- J. Safety Devices:
 - 1. Furnish a disc type automatic reset thermal cutout for primary over temperature protection.
 - 2. For secondary protection, a sufficient number of heat limiters in the power lines shall de-energize elements if the primary cutout fails.
 - 3. All safety devices shall be serviceable through the terminal box without removing the heating coil from the duct.
- K. Built-in components shall include disconnecting break magnetic contactors, transformer with primary fusing, pressure-type airflow switch set at .07" WC, all as required by UL, branch circuit fuses per NEC, interlocking disconnect switch and a single terminal block to accept the number, type and size of conductors as required.
 - 1. Insulate the terminal box.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install systems as required and as recommended by the electric heater supplier.
- B. Mount the electric heater in the duct in accordance with the requirements of SMACNA Ducted Electric Heat Guide.
- C. The electric heater shall occupy entire cross sectional area of duct.

END OF SECTION