SECTION 23 8113
PACKAGED TERMINAL AIR-CONDITIONERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air conditioning units.
B. Cabinet.
C. Evaporator fan.
D. Compressor.
E. Evaporator coil.
F. Condenser.
G. Heating coil.
H. Air filters.
I. Controls.

1.02 RELATED REQUIREMENTS

A. Section 22 0513 - Common Motor Requirements for Plumbing Equipment: Evaporator and condenser fan motors.
B. Section 22 3000 - Plumbing Equipment: Cooling condensate removal pumps.
C. Section 23 0513 - Common Motor Requirements for HVAC Equipment: Evaporator and condenser fan motors.
D. Section 23 0913 - Instrumentation and Control Devices for HVAC: Installation and wiring of thermostats and other control components.
E. Section 23 2300 - Refrigerant Piping.
F. Section 23 6313 - Air Cooled Refrigerant Condensers.
G. Section 26 2717 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. NEMA MG 1 - Motors and Generators; 2014.

1.04 PERFORMANCE REQUIREMENTS

A. Cooling:
   1. Cooling Capacity: _____ Btu/hr.
   3. Air Entering Evaporator: _____ degrees F DB and _____ degrees F WB.
   4. Air Leaving Evaporator: _____ degrees F DB and _____ degrees F WB.
   5. Water Entering Condenser: _____ degrees F.

B. Heating:
   1. Heating Capacity: _____ Btu/hr.
   3. Water Entering: _____ degrees F.
   4. Water Leaving: _____ degrees F.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for manufactured products and assemblies. Indicate water, drain, thermostatic valves, and electrical rough-in connections with electrical characteristics and connection requirements.
C. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.

D. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

E. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE
A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS
2.01 MANUFACTURERS
C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 AIR CONDITIONING UNITS
A. Description: Packaged, self-contained, factory assembled, prewired unit, consisting of cabinet, compressor, condensing coil, evaporator fan, evaporator coil, discharge plenum, outside air connection, heating coil, air filters, and controls; fully charged with refrigerant and filled with oil.
B. Assembly: Up flow air delivery, in draw-through configuration as indicated.
C. Energy Efficiency:
   1. Cooling Capacity: Less than 7000 Btu/h:
      b. Coefficient of Performance: 3.6, minimum.
   2. Cooling Capacity: Greater than or equal to 7000 Btu/h and less than or equal to 15000 Btu/h:
      b. Coefficient of Performance: 3.6, minimum.
   3. Cooling Capacity: Greater than 15000 Btu/h:
      b. Coefficient of Performance: 3.6, minimum.
D. Electrical Characteristics:
   1. Refer to Section 26 2717.
   2. Disconnect Switch:
      a. Factory mount in control panel.

2.03 CABINET
A. Frame and Panels: Galvanized steel with baked enamel finish, easily removed access doors or panels with quick fasteners.
B. Insulation: Minimum 1/2 inch thick acoustic duct liner for lining cabinet interior.
C. Drain Pan: Galvanized steel with corrosion-resistant coating.

2.04 EVAPORATOR FAN
A. Fan: Direct drive, double width, double inlet, forward curved centrifugal fan, statically and dynamically balanced, resiliently mounted.
B. Motors: _____ hp, _____ volts, single phase, 60 Hz.
   1. Refer to Section 23 0513.
2.05 COMPRESSOR
   A. Hermetically sealed, 3600 rpm maximum, resiliently mounted with positive lubrication and internal motor protection.

2.06 EVAPORATOR COIL
   A. Direct expansion coiling coil of seamless copper tubes expanded into aluminum fins.
   B. Refrigeration circuit with externally equalized thermal expansion valve, filter-drier, and charging valves.

2.07 CONDENSER
   A. Co-Axial: Copper tube in copper tube or shell and tube with finned copper tubes in steel shell with water temperature actuated water regulating valve.
   B. Fan: Double width, double inlet, forward curved centrifugal fan, statically and dynamically balanced, with permanently lubricated bearings.
   C. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts and keyed. Variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.
   D. Motors: _____ hp, _____ volts, single phase, 60 Hz.
      1. Refer to Section 23 0513.

2.08 HEATING COIL
   A. Hot water heating coil of seamless copper tubes expanded into aluminum fins.

2.09 AIR FILTERS
   A. Easily removed one inch thick permanent cleanable panel filters.

2.10 CONTROLS
   A. Factory wired controls shall include contactor, high and low pressure cutouts, internal winding thermostat for compressor, control circuit transformer, non-cycling reset relay.
   B. Provide thermostat to cycle cooling, mounted within unit with ‘fan-off-cool’ switch allowing continuous fan operation, or cycling fan on call for cooling.

PART 3 EXECUTION
3.01 INSTALLATION
   A. Install in accordance with manufacturer's instructions.
   B. Install in accordance with requirements of NFPA 90A.
   C. Provide shut-off valves in condenser water inlet and outlet piping.
   D. Pipe condensate from drain pan to nearest floor drain.

END OF SECTION 23 8113