

## SECTION 15782

### PACKAGED TERMINAL AIR CONDITIONING UNITS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Packaged terminal heat pump units.
- B. Wall sleeves and louvers.
- C. Controls.

##### 1.02 RELATED SECTIONS

- A. Division 16 - Electric.

##### 1.03 REFERENCES

- A. ARI 210 - Unitary Air-Conditioning Equipment.
- B. ARI 240 - Air Source Unitary Heat Pump Equipment.
- C. ARI 270 - Sound Rating of Outdoor Unitary Equipment.
- D. NFPA 70 - National Electrical Code.

##### 1.04 SUBMITTALS

- A. Section 01300: Procedures for submittals.
- B. Product Data: Provide Drawings indicating dimensions, rough-in connections, and electrical characteristics and connection requirements.

##### 1.05 SUBMITTALS FOR CLOSEOUT

- A. Section 01700 - Contract Closeout: Procedures for submittals.
- B. Include manufacturer's descriptive literature, operating instructions, installation instructions, and maintenance and repair data.

##### 1.06 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

##### 1.07 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for the purpose specified and indicated.

##### 1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01600 - Materials and Equipment: Transport, handle, store, and protect products.

- B. Protect finished cabinets from physical damage by leaving factory packing cases in place before installation and providing temporary covers after installation.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Trane.
- B. McQuay.
- C. Carrier.

### 2.02 PACKAGED TERMINAL HEAT PUMPS

- A. Description: Packaged, self-contained, through-the-wall air cooled terminal heat pump units, with wall sleeve, room cabinet, electric refrigeration system, electric heating, outside air louvers, built-in temperature controls; fully charged with refrigerant and filled with oil.

### 2.03 UNIT CHASSIS

- A. Each unit will be slide-out design shipped with the front cover installed. The unit chassis will have the ability to be installed with zero reversing clearance from finished floor. An electrical power cord will be included with the chassis and installed by the manufacturer to assure proper NEMA 6 or 7 configuration and UL approved length. Unit will be tested for conformance to ASTM water infiltration specification ASTM 331-00, which assures no water infiltration when tested at eight inches of rain per hour at 63 mph wind for 15 minutes.

### 2.04 ROOM CABINET/FRONT PANEL

- A. The room cabinet/front panel will have a sloped discharge so that obstructions are not placed on unit. The discharge conditioned air can be directed into the room at an angle of 15 to 40 degrees from the vertical position. The discharge grille will be a polycarbonate material to resist bending, cracking, rusting and corrosion. The front panel will be able to be field secured to chassis to inhibit tampering. Cabinet depth will be seven inches to minimize the unit's impact on room space.

### 2.05 FILTER

- A. The filter will be accessible without removing the front cover. Filter material will be permanent, cleanable nylon mesh.

### 2.06 CONDENSER/EVAPORATOR FANS

- A. Fans will have two direct drive two speed motors with permanent split capacitors. The condenser fan will be propeller type and the indoor evaporator fan will be a cross flow blower type.

### 2.07 COOLING CONDENSATE REMOVAL

- A. The unit will have a condensate removal system for high humidity conditions. The system will include a slinger ring which diffuses water directly on to the outdoor condenser coil for rapid evaporation and increased cooling efficiency.

## 2.08 COMPRESSOR

- A. The compressor will be hermetically sealed, internally isolated, rotary-type and permanently mounted on rubber isolators. No removal or adjustment of compressor hold down bolts will be required during installation.

## 2.09 COILS

- A. Coils will have grooved copper tubing expanded into rippled-edge slit aluminum enhanced fins.

## 2.10 HEAT PUMPS

- A. Heat pumps will include the following features: A changeover thermostat that senses an outside coil switch-over temperature of 20 °F, a lock-open refrigerant valve, temperature-activated defrost drain, and automatic emergency heat that operates to override the heat pumps changeover thermostat and bring on electric resistance heaters in the event of a sealed system failure. Unit will not operate compressor and electric heaters simultaneously.

## 2.11 OUTSIDE AIR DAMPER/VENT CONTROL

- A. The outside air vent shall be permanently locked in the closed position and sealed shut with caulking suitable for the application.

## 2.12 PAINT SYSTEM CORROSION PROTECTION

- A. All units will be built with hot-dipped galvanized steel. Metal parts are then run through a six-stage zinc phosphate cleaner/pretreatment, painted with a cathodic electroplating of epoxy resin paint and baked for 20 minutes at 350 °F. All exterior parts that are exposed to sunlight get an additional coating of paint and are baked for 20 minutes at 350 °F for additional protection from the fading effects of ultraviolet rays. This paint process makes the unit highly resistant to normal rust, corrosion and fading. It is the best paint process in the industry today.

## 2.13 CORROSION RESISTANT CHASSIS

- A. The condenser coil is painted using cathodic electrocoat. The bottom 1/4 of the compressor is coated with a water borne resin. The outdoor side of interior parts are top coated, in addition, the base pan is cathodic electrocoated.

## 2.14 UNIT CONTROLS

- A. The unit controls will be full solid-state and accessible from the front of the unit. The standard unit mounted controls will include two rotary knobs controlling unit operational mode and temperature setpoint. The unit operational mode switch includes:
  1. Off position.
  2. Fan only - unit operates on low fan speed.
  3. Low cool - unit operates on low fan speed to circulate air for cooling.
  4. High cool - unit operates on high fan speed to circulate air for cooling.
  5. Low heat - unit operates on low fan speed to circulate air for heating.
  6. High heat - unit operates on high fan speed to circulate air for heating.

## 2.15 TEMPERATURE INDICATOR

- A. The temperature indicator will be controlled by turning the knob clockwise for a warmer room temperature; turning it counterclockwise will provide a cooler room temperature. Adjusting the thermostat to the mid setting (vertical) will set the room temperature at approximately 70 °F. Temperature setpoints and ranges are clearly labeled on the unit.

## 2.16 ON BOARD DIAGNOSTICS

- A. A LED will flash a code displaying 1 of 9 specific failure conditions, which include: Compressor failure, blown fuse, mode failure, setpoint failure, thermostat wiring failure, indoor air thermistor failure, indoor coil thermistor failure, outdoor air thermistor failure, and outdoor coil thermistor failure.

## 2.17 TEMPERATURE LIMITER

- A. The temperature limiting feature can reduce energy costs by controlling the maximum temperature in heating and the minimum temperature in cooling.

## 2.18 ROOM FREEZE PROTECTION

- A. Freeze protection will be built into all units and will activate the electric resistance heater (when it senses a temperature of 40 °F room temperature) to maintain an above freezing temperature at the sensor.

## 2.19 FAN CYCLE SWITCH

- A. The fan cycle switch sets the operational mode of the fan. In the ON position, the fan will run continuously whenever the unit is in the heat or cool position. In the AUTO position, the fan will cycle on and off with the compressor or electric heater when the unit is in the cool or heat mode.

## 2.20 AUTOMATIC ENERGY HEAT STAGED THERMOSTAT

- A. On every unit mounted controlled heat pump, electric heat will engage automatically if the sealed system or compressor fails.

## 2.21 COMPRESSOR TIME DELAY

- A. The compressor will not try to restart once running or until approximately three minutes have elapsed after shutdown.

## 2.22 OUTDOOR GRILLES

- A. Outdoor grilles shall be anodized aluminum horizontal louver architectural grille.

## 2.23 SUBBASES

- A. Subbases are prewired to facilitate field electrical connections and include a NEMA 6 or 7 configuration electrical receptacle. The subbases include two leveling legs for sleeve support and accurate unit leveling during installation. The subbase attaches to the wall sleeve and provides a concealed cord path to the chassis and a concealed plug connection.

## 2.24 POWER SWITCH

- A. The power switch provides an on/off switch which can be installed in the subbase accessory.

## 2.25 CONDENSATE DISPOSAL PUMP KIT - HEAT PUMP ONLY

- A. The internal condensate pump serves as an effective means for disposing of condensate generated during heat pump operation by transferring it to the indoor coil. The warm coil surface and the warm room air help in evaporation of the condensate while adding humidity to the room.

2.26 CONTROL COVER KEY LOCK

- A. Key lock helps prevent tampering of the controls used to set temperature, heating and cooling functions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Coordinate installation of units with architectural and electrical work.

END OF SECTION