

SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Conventional split-system air-conditioning and heat-pump units 5 tons and below.
2. 100% outdoor air split-system air-conditioning and heat-pump units.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Operation and maintenance data.
- C. Warranty.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2016.

1.4 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
 1. Warranty Period:
 - a. For Compressor: Five year(s) from date of Substantial Completion.
 - b. For Parts: One year(s) from date of Substantial Completion.
 - c. For Labor: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. For Split Systems
 - a. Carrier Corporation; Home Comfort and HVAC Building & Industrial Systems.
 - b. Lennox International Inc.
 - c. Trane; a business of American Standard companies.
 - d. YORK; a Johnson Controls company.
2. For 100% Outdoor Air Split Units
 - a. Desert Aire, no exceptions.

2.2 CONVENTIONAL SPLIT SYSTEMS - 5 TONS OR LESS

A. Indoor Units - Evaporator-Fan Components:

1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
2. Insulation: Faced, glass-fiber duct liner or double wall foamed.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with AHRI 210/240.
4. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
5. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
6. Fan Motor: High efficiency electronically commutated motor (ECM).
7. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in the current version of ASHRAE 62.1.
8. Filters: Throwaway.
9. Condensate Drain Pans: Sloped, corrosion-free drain pan.
10. Cabinet Leakage:
 - a. Cabinet air leakage less than 2.0% at 1.0 inch H₂O when tested in accordance with ASHRAE standard 193.
 - b. Cabinet air leakage less than 1.4% at 0.5 inch H₂O when tested in accordance with ASHRAE standard 193

B. Outdoor Units - Air-Cooled, Compressor-Condenser Components:

1. Casing: Steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - a. Compressor Type: Scroll.
 - b. Compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - c. Refrigerant Charge: R-410A.
 - d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid sub-cooler. Comply with AHRI 210/240.

3. Condenser Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with AHRI 210/240. Provide Manufacturer's seacoast protective coil coating.
4. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
5. Fan: Aluminum-propeller type, directly connected to motor.
6. Motor: Permanently lubricated, with integral thermal-overload protection.
7. Low Ambient Kit: Permits operation down to 45 deg F.

2.3 100% OUTDOOR AIR SPLIT SYSTEMS

A. Indoor Units - Evaporator-Fan-Compressor Components:

1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
2. Insulation: Double wall foamed.
3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with AHRI 210/240. Provide Luvata electrofin e-coat protective coating on coil.
4. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
5. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
6. Fan Motor: High efficiency electronically commutated motor (ECM).
7. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in the current version of ASHRAE 62.1.
8. Filters: Throwaway.
9. Condensate Drain Pans: Sloped, double wall, stainless steel drain pan.
10. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - a. Compressor Type: Scroll.
 - b. Compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
 - c. Refrigerant Charge: R-410A.
 - d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid sub-cooler. Comply with AHRI 210/240.
11. Cabinet Leakage:
 - a. Cabinet air leakage less than 2.0% at 1.0 inch H₂O when tested in accordance with ASHRAE standard 193.
 - b. Cabinet air leakage less than 1.4% at 0.5 inch H₂O when tested in accordance with ASHRAE standard 193

B. Outdoor Units - Air-Cooled, Condenser Components:

1. Casing: Steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Condenser Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with AHRI 210/240. Provide Manufacturer's seacoast protective coil coating.
3. Fan: Aluminum-propeller type, directly connected to motor.
4. Motor: Permanently lubricated, with integral thermal-overload protection.
5. Low Ambient Kit: Permits operation down to 45 deg F.
6. Mounting Base

2.4 ACCESSORIES

- A. Control equipment ~~and sequence of operation are~~ is specified in Division 23 Sections "Instrumentation and Control for HVAC". ~~and "Sequence of Operations for HVAC Controls."~~
Refer to contract drawings for Sequences of Operation.
- B. Automatic-reset timer to prevent rapid cycling of compressor.

2.5 CAPACITIES AND CHARACTERISTICS

- A. Refer to schedule on Contract Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install air handler using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install ground-mounted, compressor-condenser components on 4-inch-thick, reinforced concrete base that is 4 inches larger, on each side, than unit.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.
- C. Duct Connections: Duct installation requirements are specified in Division 23 Section "Metal Ducts" Drawings indicate the general arrangement of ducts. Connect supply ducts to split-system air-conditioning units with flexible duct connectors.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 238126