

Part 1 General

1.1 SECTION INCLUDES

- .1 Condensing unit package.
- .2 Charge of refrigerant and oil.
- .3 Controls and control connections.
- .4 Refrigerant piping connections.
- .5 Motor starters.
- .6 Electrical power connections.

1.2 RELATED SECTIONS

- .1 Section 23 23 00 - Refrigerant Piping And Specialties.
- .2 Section 25 90 00 - Sequence Of Operation.
- .3 Section 26 05 80 – Equipment Wiring

1.3 REFERENCES

- .1 ARI 270 - Sound Rating of Outdoor Unitary Equipment.
- .2 ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.
- .3 ASHRAE 14 - Methods of Testing for Rating Positive Displacement Condensing Units.
- .4 ASHRAE 15 - Safety Standard for Refrigeration Systems.
- .5 ASHRAE 90A - Energy Conservation in new Building Design.
- .6 NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- .7 UL 207 - Refrigerant-Containing Components and Accessories, Non-electrical.
- .8 UL 303 - Refrigeration and Air-Conditioning Condensing, and Air-Source Heat Pump Equipment.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 21 05 00: Procedures for submittals.
- .2 Shop Drawings: Indicate components, assembly, dimensions, weights and loadings, required clearances, and location and size of field connections. Include schematic layouts showing condensing units, cooling coils, refrigerant piping, and accessories required for complete system.
- .3 Product Data: Provide rated capacities, weights specialties and accessories, electrical nameplate data, and wiring diagrams. Refer to Section fans, 23 73 23.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 21 05 00: Submittals for information.
- .2 Design Data: Indicate pipe and equipment sizing.
- .3 Submit manufacturer's installation instructions.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

- .1 Section 21 05 00: Submittals for project closeout.
- .2 Operation and Maintenance Data: Include start-up instructions, maintenance instructions, parts lists, controls, and accessories.

1.7 REGULATORY REQUIREMENTS

- .1 Products Requiring Electrical Connection: Listed and classified by testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 21 05 00: Transport, handle, store, and protect products.
- .2 Comply with manufacturer's installation instructions for rigging, unloading, and transporting units.
- .3 Protect units on site from physical damage. Protect coils.

1.9 WARRANTY

- .1 Section 21 05 00: Submittals for project closeout.
- .2 Provide a five year warranty to include coverage for refrigerant compressors.

1.10 EXTRA MATERIALS

- .1 Section 21 05 00: Submittals for project closeout.

Part 2 Products

2.1 AIR COOLING CONDENSING UNITS – 1.5 TO 5 TONS

- .1 MANUFACTURERS
 - .1 Carrier
 - .2 AAON
 - .3 Daikin
 - .4 Substitutions: Refer to Section 21 05 00.
- .2 MANUFACTURED UNITS
 - .1 Units: Self-contained, packaged, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressors, condensing coil and fans, integral sub-cooling coil, controls, liquid receiver, and screens.

- .2 Construction and Ratings: To ARI 210/240. Testing to ASHRAE.
- .3 Performance Ratings: Energy Efficiency Rating (EER) not less than prescribed by ASHRAE 90A.
- .4 Refrigerant charge: 410a
- .3 CASING
 - .1 Unit cabinet, including louvered coil guard, will be constructed of galvanized steel, bonderized, and coated with a powder coat paint.
- .4 CONDENSER COILS
 - .1 Coils: Aluminum fins mechanically bonded to seamless copper tubing.
 - .2 Coil Guard: Louvred
- .5 FANS AND MOTORS
 - .1 Vertical discharge direct driven propeller type condenser fans with fan guard on discharge.
 - .2 Condenser fan motors will be totally enclosed, 1—phase type with class B insulation and permanently lubricated..
 - .3 Fan blades will be statically and dynamically balanced.
 - .4 Condenser fan openings will be equipped with coated steel wire safety guards.
- .6 COMPRESSORS
 - .1 Compressor: Hermetic scroll type.
 - .2 Mounting: Statically and dynamically balance rotating parts and mount on rubber-in-shear vibration isolators.
 - .3 Capacity Reduction Equipment: two-step scroll compressors for load matching cooling and heating and improved part load efficiency
 - .4 Compressor will be covered with a sound absorbing blanket.
- .7 REFRIGERANT CIRCUIT
 - .1 Provide each unit with one refrigerant circuit, or two independent refrigerant circuits, where shown on the drawings factory supplied and piped.
 - .2 For each refrigerant circuit, provide:
 - .1 liquid—line back seating shutoff valve with sweat connections,
 - .2 vapor--line back seating shutoff valve with sweat connections,
 - .3 system charge of R-410A refrigerant,
 - .4 POE compressor oil, accumulator, and, reversing valve.
 - .5 High pressure switch, loss of charge switch, filter drier
 - .6 Thermostatic Expansion Valve (TXV) Bi—Flow
 - .7 Snow Stand
 - .8 Liquid--Line Solenoid Valve (LLS)
 - .9 Crankcase heater
 - .10 Compressor Hard Start capacitor and relay
- .8 CONTROLS
 - .1 Control signal to come from associate system with evaporator coil.
- .9 ELECTRICAL CHARACTERISTICS AND COMPONENTS
 - .1 Electrical Characteristics:
 - .1 Refer to Section 26 05 80.

- .2 Motor: Refer to Section 23 05 13.

Part 3 Execution

3.1 INSTALLATION

- .1 Install to manufacturer's installation written instructions.
- .2 Complete structural, mechanical, and electrical connections to manufacturer's installation instructions.
- .3 Provide for connection to electrical service.
- .4 Install units on concrete base
- .5 Provide connection to refrigeration piping system and evaporators. Refer to Section 23 23 00. Comply with ASHRAE 15.
- .6 Provide charge of refrigerant and oil.

3.2 DEMONSTRATION AND INSTRUCTIONS

- .1 Section 21 05 00: Demonstrating installed work.
- .2 Replace losses of oil or refrigerant prior to end of correction period.
- .3 Charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.
- .4 Shut-down system if initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.
- .5 Provide cooling season start-up, and winter season shut-down for first year of operation.
- .6 Inspect and test for refrigerant leaks for start-up and shut down during first year of operation.

END OF SECTION