

SECTION 15740

CONDENSING UNITS

PART 1 DESIGN DIRECTIVES

1.1 DESIGN CRITERIA

- A. In areas where critical control is required, provide hot gas bypass control.
- B. Consultant shall determine the quantity of cylinder unloaders and schedule on the drawings.
- C. Coordinate with DC-FO&M for monitoring points to be relayed through the DDC system.
- D. Low ambient control shall be provided where winter operation is required and shall be via fan speed control.

1.2 SUBMITTALS

- A. Submit manufacturer's technical product data, including rated capacities of selected model clearly indicated, operating weights, dimensions, required clearances, and methods of assembly of components, furnished specialties and accessories; and installation and start-up instructions.
- B. Submit maintenance data and parts list for each condensing unit, control, and accessory; including "trouble shooting" maintenance guide; plus servicing, and preventative maintenance procedures and schedule. Include this data and product data in maintenance manual.

1.3 QUALITY ASSURANCE

- A. Comply with the latest applicable ARI Standard.
- B. Condensing units shall meet or exceed the minimum COP/Efficiency levels as prescribed in ASHRAE 90A "Energy Conservation in New Building Design" and shall be listed by UL and have UL label affixed.

1.4 EXTENDED WARRANTY

- A. Provide 5 years written warranty, signed by manufacturer, agreeing to replace/repair, within warranty period, motors/compressors with inadequate or defective materials and workmanship, including leakage, breakage, improper assembly, or failure to perform as required; provided manufacturer's instructions for handling, installing, protecting, and maintaining units have been adhered to during warranty period. Replacement is limited to component replacement only, and does not include labor for removal and reinstallation.

PART 2 PRODUCTS

2.1 AIR-COOLED CONDENSING UNITS

- A. Subject to compliance with requirements, provide air-cooled condensing units of one of the following:
 - 1. Carrier Air Conditioning; Div of Carrier Corp.
 - 2. McQuay Air Conditioning Group; McQuay Inc.
 - 3. York; Div of York International.
- B. Provide factory-assembled and tested air-cooled condensing units, consisting of casing, compressors, condensers, coils, condenser fans and motors, and unit controls.
- C. Unit casings shall be designed for outdoor installation and complete with weather protection for components and controls, and complete with removable panels for required access to compressors, controls, condenser fans, motors, and drives. Casing surfaces shall be galvanized steel finished with manufacturer's standard paint coating. Where units are located in areas that are accessible to the public, provide metal grilles to protect the condenser coil.
- D. Reciprocating hermetic or scroll type compressor(s) designed for air-cooled condensing, complete with crankcase sight glass, crankcase heater, and service access valves on suction and discharge ports. Capacity shall be controlled through cylinder unloading.
- E. Operating and safety controls shall include high and low pressure cutouts, oil pressure cutout, compressor winding thermostat cutout, 3-leg compressor overload protection, five-minute time delay, and condenser fan motors with thermal and overload cutouts. Provide magnetic contactors for compressor and condenser fan motors.
- F. Condenser coil shall be seamless copper tubing mechanically bonded to heavy-duty, aluminum fins, with separate and independent refrigeration circuit for each compressor. Units shall include liquid accumulator and subcooling circuit, and liquid line service access valve. Condenser coils shall be factory-tested at 450 psig, vacuum dehydrate, and filled with a holding charge of nitrogen.
- G. Condenser fans and drives shall be direct drive propeller-type condenser fans for vertical air discharge. Condenser fan motors shall have permanently lubricated ball bearings and be dynamically and statically balanced.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install condensing units in accordance with manufacturer's installation instructions maintaining manufacturer's recommended clearances.
- B. Support:
 - 1. Install ground-mounted units on reinforced concrete pad, 4" larger on each side than condensing unit.
 - 2. Install roof-mounted units on equipment supports. Anchor unit to supports with removable fasteners.

3.2 DEMONSTRATION

- A. Provide services of manufacturer's authorized service representative to provide start-up service and to instruct Owner's personnel in operation and maintenance of condensing units.
- B. Start-up condensing units, in accordance with manufacturer's start-up instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- C. Train Owner's personnel on start-up and shut-down procedures, troubleshooting procedures, servicing, and preventative maintenance schedule and procedures. Review with the Owner's personnel, the data contained in the Operating and Maintenance Manuals specified in Division One.

END OF SECTION 15740