

SECTION 23 23 00

REFRIGERANT PIPING

PART 1 GENERAL

1.01 HOTWORK

- A. General Conditions of the Contract. Special note should be taken of Permitting requirements and HOTWORK regulations as identified in Article 4.

1.02 QUALITY ASSURANCE

- A. Installer Qualifications: five (5) year minimum installation experience on projects with refrigeration piping system work similar in scope and nature to that required for the project.
- B. Brazing Qualifications: certify operators, brazing procedures and brazers in accordance with ANSI B31.5 for shop and job-site brazing of refrigerant piping work.

1.03 SUBMITTALS

- A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop, based on manufacturer's test data, for thermostatic expansion valves, solenoid valves, and pressure-regulating valves.
- B. Welding Certificates: Copies of certificates for welding procedures and personnel.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- D. Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals specified in Division 1.

1.04 COORDINATION

- A. Coordinate layout and installation of refrigerant piping and suspension system components with other construction, including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.
- B. Coordinate pipe sleeve installations for foundation wall penetrations.
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.
- D. Coordinate pipe sleeve installations for penetrations in exterior walls and floor assemblies.

1.05 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Refrigeration Oil Test Kits: Two each, containing everything required to conduct one test.
 - 2. Refrigerant: Two containers each, with 20 lb (9 kg) of refrigerant.
 - 3. Filter-Dryer Cartridges: Three of each type.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

- A. Tubes, Fittings and Joints
 - 1. Tube material
 - a) Size 3/4" and smaller: hard drawn temper copper tube.
 - b) Size 3/4" through 4-1/8": hard drawn temper copper tube.
 - 2. Type ACR.
 - 3. Fittings: wrought-copper solder joints, ANSI B16.22.
 - 4. Joints: brazed with material having shear strength of 10,000 psi or greater.
 - 5. Hangers: unitstrut with insulated clamps

6. All condensate lines need to be at least 1" pipe

2.02 REFRIGERANT VALVES

A. Globe and Check Valves

1. Acceptable Manufacturers
 - a) Henry Valve Co.
 - b) Parker Hannifin Corp.
 - c) Singer
 - d) Sporlan Valve Co.

B. Solenoid Valves

1. Acceptable Manufacturers
 - a) Alco Controls Division, Emerson Electric Co.
 - b) Automatic Switch Co.
 - c) Sporlan Valve Co.

C. Refrigeration Accessories

1. Including strainers, moisture-liquid indicators, filter dryers, evaporator pressure regulators, discharge line mufflers, expansion valves, superheat adjustment.
2. Manufacturers
 - a) Alco Controls Division, Emerson Electric Co.
 - b) Henry Valve Co.
 - c) Parker Hannifin Corp.
 - d) Sporlan Valve Co.

2.03 COMPRESSORS

- A. Specify a five (5)-year extended warranty.

2.04 ACCESSORY EQUIPMENT TO INCLUDE

- A. Filter dryer for liquid line of adequate size, replaceable if available.
- B. Sight glass moisture indicator installed in the liquid line at a convenient and accessible location.
- C. Liquid solenoid valve located near the expansion valve on systems using coil pump-down.
- D. Service hand valves shall be required on small and extensive or large refrigerant systems. They shall be located for component isolation purposes during normal maintenance.
- E. Liquid charging port and service valve installed in the liquid line on large systems.
- F. Oil separators required if evaporator is below 0°F and located below condensing unit

PART 3 EXECUTION

3.01 INSTALLATION

- A. Specify that it is not acceptable to vent to atmosphere when using refrigerant for testing systems.
- B. Specify condensate pans that slope toward drain.
- C. Install refrigerant piping according to ASHRAE 15.
- D. Hanger, support, and anchor products are specified in Division 23.
- E. Oil return lift traps on suction line every 15' of vertical piping.

END OF SECTION 23 23 00