SECTION 22 15 00
GENERAL SERVICE COMPRESSED-AIR SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

A. A shop compressed air system, complete, ready for operation, including compressors, electric motors and starters, receiver, all necessary piping, fittings, valves, gages, switches and all necessary accessories, connections and equipment.

1.2 RELATED WORK

A. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

B. Exposed Piping and Gages: Section 22 05 19, METERS AND GAGES FOR PLUMBING PIPING.

C. Section 26 29 11, LOW-VOLTAGE MOTOR STARTERS.

D. Section 22 05 12, GENERAL MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT.

E. Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Piping
2. Valves
3. Pressure Gages
4. Air Pressure Reducing Valve
5. Air Compressor System:
   a. Characteristic performance curves.
   b. Efficiency.
   c. Compressor; manufacturer and model
   d. Compressor operating speed
   e. Capacity; (free air delivered at indicated pressure)
   f. Type of bearing in compressor
   g. Type of lubrication
   h. Capacity of receiver
   i. Unloader; manufacturer, type, and model
   j. Type and adjustment of drive
   k. Electrical motor; manufacturer, frame and model
   l. Speed of motor
   m. Current characteristics and HP of motor
   n. Inlet air muffler filter; manufacture, type, and model
   o. After cooler; manufacturer, type, and model

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

C. American National Standards Institute (ANSI):

A13.1-1996(R2002).....Scheme for the Identification of Piping Systems

Bl6.22-2001.....Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

D. American Society for Testing and Materials (ASTM):

B32-08.....Standard Specification for Solder Metal

B61-08.....Standard Specification for Steam or Valve Bronze Castings B88-03 Standard Specification for Seamless Copper Water Tube

F. American Welding Society (AWS):

A5.8/A5.8M-2004.....Specification for Filler Metals for Brazing and Braze Welding

G. Manufacturer Standardization of the Valve and Fittings Industry, Inc (MSS):

SP-70-2006.....Gray Iron Gate Valves Flanged and Threaded Ends

SP-72-1999.....Ball Valves with Flanged or Butt-Welding Ends For General Service

SP-110-1996.....Ball Valve Threaded, Socket Welding, Solder Joint, Grooved and Flared Ends

PART 2 - PRODUCTS

2.1 PIPING

A. Type "K" or "L" copper tube, ASTM B88, drawn, with wrought copper fittings conforming to ANSI Bl6.22.

B. Unions: Factory-fabricated bronze assembly, for 1725-kPa (250 psi) minimum working pressure at 82 deg C (180 deg F).

C. Solder: ASTM B32, 50/50, special alloy, lead free, with non-corrosive flux. No purging with nitrogen is required.

D. Silver Brazing Alloy: AWS A5.8, Classification BCuP.

E. Apply piping identification in accordance with ANSI A13.1

2.2 VALVES

A. Ball:

1. 88mm (3 inches) and smaller: MSS SP72 & SP 110, Type II, Class A, Style 1, Brass, nickel plated, brazed connections. Full ported, three piece, Buna N or Teflon seat seals full flow, 2050 kPa (300 psi) minimum working pressure.

B. Butterfly: 50mm (2 inches) and smaller, MSS SP72 & SP 110, Brass, nickel plated, brazed connections.

C. Check:

1. 80mm (3 inches) and smaller: Bronze body and bonnet ASTM B61 or B62. Non-metallic discs, 850 kPa (125 psi) WSP.

2.3 PRESSURE GAGES

A. Shall be manufactured expressly for compressed air service. This includes gages temporarily supplied for testing purposes, as specified in Section 22 05 19, METERS AND GAGES FOR PLUMBING PIPING.

2.4 AIR PRESSURE REDUCING VALVE

A. 80mm (3 inches) and smaller, bronze body and trim, single seated, for dead-end service for 69 to 207 kPa (10 to 30 psi) range on low pressure side. Composition diaphragm and bronze spring to set directly on valve stem. Delivered pressure shall vary not more than one kPa for each 10 kPa variation in inlet pressure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Open ends of tube shall be kept capped or plugged at all times.

B. Cut tubing square and accurately with a tube cutter (sawing not permitted) to measurements determined at place of installation and work into place without springing or forcing. Tube must bottom in each solder socket so there are no gaps between tube and fitting where solder can enter the inside of line. Ream tube to remove burrs, being careful not to expand tube and that no chips of copper remain in the line. Exercise care in handling equipment and tools used in cutting or reaming of pipe to prevent oil or grease being introduced into piping.

C. Particular care shall be exercised, when flux is applied to avoid leaving any excess inside the completed joints. Thoroughly wash the outside of each joint with clean hot water after assembly to remove oxide coating.

D. Spacing of hangers: Minimum spacing as required by the ICC International Plumbing Code Section 308.

E. Rigidly support valves and other equipment to prevent strain on tube or joints.

3.2 TESTS

A. Make tests under actual or simulated operating conditions and prove full compliance with design and specified requirements.

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