AIRPIPE COMPRESSED AIR & GAS PIPING SYSTEM SPECIFICATION

GENERAL-SERVICE COMPRESSED AIR & GAS PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. This specification includes piping and related specialties for compressed air and inert gas (Argon, Helium, Nitrogen, CO2, and Arcal) systems operating at 300 psig in diameters ¾" to 2", 232 psig in diameters 2 ½" to 6", and 188 psig for 8". Operating temperature at -4°F to +176°F. System must utilize elastomeric sealing technology to account for thermal variations and vibration. Vacuum rating of 3.8" Hg (exceeding 28" Hg).

1.2 ENGINEERING STANDARDS & QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME B31.1 (power piping), ASME B31.3 (process piping), and ASME B31.9 (low pressure building services piping).

B. Piping manufactured to ASTM B241

C. ISO 8573-1 Class 1.1.1

D. UL94HB

E. ISO 9001 & 14001

F. FDA CFR 21, GRAS, U.S. Food and Drugs Regulation

PART 2 – PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. Aluminum piping system equal to AIRpipe rigid grade 6063 Aluminum with a T5 thermal hardness treatment. It shall be extruded and calibrated within the tolerances specifically required by the manufacturer and be available in the following diameters: (OD) 20 mm (17.5 mm inside), 25 mm (22.5 mm inside), 40 mm (36.5 mm inside), 50 mm (45.7 mm inside), 67.6 mm (63 mm inside), 84.8 mm (80 mm inside), 101.8 mm (96.8 mm inside), 153 mm (147.5 mm inside), 205 mm (198.6 mm inside).

B. Fittings equal to AIRpipe A360 & ZL104 Aluminum without the use of plastic or polyamide fitting bodies. Pipe-to-pipe sealing utilizes concentric Nitrile seals with a thickness greater than ½".

C. Fittings ¾" to 2" to utilize 316 Stainless Steel grab rings with a greater than 2 mm cross-sectional width that bites into pipe past the powder coated surface. Fittings 2 ½" to 8" to utilize a lugged groove.

D. Fittings to be individually factory labeled with part number and date code.

E. Fittings are supplied factory cleaned and individually bagged.

F. AIRpipe or equal lockable ball / butterfly valves

2.1 PIPES, TUBES, AND FITTINGS (CONT')

G. AIRpipe or equal aluminum class 150 ANSI flanges.

H. AIRpipe or equal aluminum quick drop fittings for horizontal take off.

I. AIRpipe or equal flexible hose connections.

PART 3 – INSTALLATION

3.1 PIPE INSTALLATION

A. All aluminum piping to be installed in strict accordance with AIRpipe installation instructions and specifications.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of compressed-air piping. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, air-compressor sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls.

D. Install piping adjacent to equipment and machines to allow service and maintenance.

E. Install air and drain piping with 1 percent slope downward in direction of flow.

F. Install nipples, flanges, unions, transition and special fittings, and valves with pressure ratings same as or higher than system pressure rating, unless otherwise indicated.

G. Install branch connections to compressed-air mains from top of main. Provide drain leg and drain trap at end of each main and branch and at low points.

H. Install piping to permit valve servicing.

I. Install piping free of sags and bends.

J. Install unions, adjacent to each valve and at final connection to each piece of equipment and machine, unless connections and/or valve have tightening features that allow disassembly.

K. Install sleeves for piping penetrations of walls, ceilings, and floors.

L. Install escutcheons for piping penetrations of walls, ceilings, and floors.

M. Provide fire caulk around all penetrations thru fire separations in accordance with the building code. Do not penetrate fire walls without specific instructions from the engineer. Submit UL listing for all fire-proofing materials.

N. Turn over to the Owner at completion one complete toolset for making field connections. Include all required factory fixtures.

3.2 HANGER AND SUPPORT INSTALLATION

A. Horizontal and vertical AIRpipe piping shall be supported by AIRpipe fixing clips. Hanger rods to be solid with only enough thread for the connection ends. Hangers to be spaced at nine-foot intervals or less, as required to avoid sag, prevent vibration, and allow accurate leveling or grading.

B. Install supports for vertical tubing every 9’ as required to secure the piping network.