

SECTION 15515
HYDRONIC SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Expansion tanks.
- B. Air vents.
- C. Air separators.
- D. Strainers.
- E. Pump suction fittings.
- F. Combination fittings.
- G. Radiator valves.
- H. Relief valves.
- I. Air eliminator.
- J. Flexible Pipe Connectors.
- K. Pipe Wells.
- L. Vibration Isolation.
- M. Backflow preventers

1.2 REFERENCES

- A. ANSI/ASME - Boilers and Pressure Vessels Code.

1.3 REGULATORY REQUIREMENTS

- A. Conform to ANSI/ASME Boilers and Pressure Vessels Code Section 8D for manufacture of tanks.

1.4 QUALITY ASSURANCE

- A. Manufacturer: For each product specified, provide components by same manufacturer throughout.

1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Submit shop drawings and product data for manufactured products and assemblies required for this project.
- C. Include component sizes, rough-in requirements, clearances, service sizes, and finishes. Include product description, model, and dimensions.
- D. Submit inspection certificates for pressure vessels.
- E. Submit manufacturer's installation instructions under provisions of Section 01300.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01700.
- B. Include installation instruction, assembly views, lubrication instructions, and replacement parts list.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01600.
- B. Store and protect products under provisions of Section 01600.

PART 2 PRODUCTS

2.1 EXPANSION TANKS

- A. Construction: Full acceptance bladder expansion tank; closed, welded steel, tested and stamped in accordance with Section 8D of ANSI/ASME Code; 125 psi rating; cleaned, prime coated, and supplied with steel support saddles; with tapings for installation of accessories.
- B. Quick Connect Air Inlet: Automotive tire valve type, manual air vent, tank drain, and pressure relief valve.
- C. Automatic Cold Water Fill Assembly: Pressure reducing valve, reduced pressure double check back flow preventer, test cocks, strainer, vacuum breaker, and valve by-pass.
- D. Chilled Water System: Set expansion tank pressure relief valve at 75 psi maximum and pressure reducing valve at 15 psi.

2.2 AIR VENTS

- A. Manual Type: Short vertical sections of 2" diameter pipe to form air chamber, with 1/8" brass needle valve at top of chamber.
- B. Float Type: Brass or semi-steel body, copper float, stainless steel float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.
- C. Washer Type: Brass with hydroscopic fiber discs, vent ports, adjustable cap for manual shut-off, and integral spring loaded ball check valve.

2.3 AIR SEPARATORS

- A. Air Elimination Valve: Bronze, float operated, for 125 psig operating pressure.
- B. Combination Air Separators/Strainers: Steel, tested and stamped in accordance with Section 8D of ANSI/ASME Code, for 125 psig operating pressure, without galvanized steel integral strainer, tangential inlet and outlet connections, and internal stainless steel air collector tube.
- C. Bottom drain with ball valve.

2.4 STRAINERS

- A. Size 2" and under: Y pattern screwed brass or iron body for 175 psig working pressure, with 1/8" stainless steel perforated screen equal to 2½ times pipe area minimum.
- B. Size 2½" to 4": Y pattern flanged or grooved ductile iron body for 300 psig maximum working pressure, with 1/8" or 1/16" stainless steel perforated screen equal to 2½ times pipe area minimum.
- C. Size 5" and Larger:
 - 1. Basket pattern flanged iron body for 175 psig working pressure, with 1/8" stainless steel perforated screen equal to 2½ times pipe diameter area.
 - 2. Flanged or grooved ductile iron body for 300 psig maximum working pressure, T pattern with 1/8" or 1/16" stainless steel perforated screen equal to 2½ times pipe diameter area.
- D. Provide one strainer for each air handler, chilled water pump fan coil unit or unit ventilator.

2.5 PUMP SUCTION FITTINGS

- A. Fitting: Angle pattern, cast-iron or ductile body, threaded for 2" and smaller, flanged or grooved for 2½" and larger, rated for 300 psig maximum working pressure, with inlet vanes, cylinder strainer with 3/16" diameter openings, disposable stainless steel fine mesh strainer to fit over cylinder strainer, and permanent magnet located in flow stream and removable for cleaning.
- B. Accessories: Base support boss or adjustable foot support, blow down tapping in bottom, gage tapping in side.

2.6 FLOW INDICATORS

- A. Brass construction, threaded for insertion into piping system, packless, with paddle with removable segments, vapor proof electrical compartment with switches.
- B. Pressure differential flow switch.

2.7 RELIEF VALVES

- A. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

2.8 GLYCOL SYSTEM

- A. Mixing Tank: 45-gallon steel drum with fittings suitable for filling and hand pump for charging, rubber hose for connection of hand pump to system.
- B. Storage Tank: Closed type, welded steel constructed, tested and stamped in accordance with Section 8D of ANSI/ASME Code; 125 psi rating; cleaned, prime coated, and supplied with steel support saddles. Construct with tapping for installation of accessories.
- C. Expansion Tank: Expansion tank and vent fitting with automatic air separator.
- D. Air Pressure Reducing Station: Pressure reducing valve with shut-off valves, strainer, check valve and needle valve bypass.
- E. Glycol Solution: Inhibited ethylene or propylene glycol and water (food safe) solution, mixed 50-50, suitable for operating temperatures of -40°F.

2.9 AIR ELIMINATOR - AUTOMATIC TYPE

- A. Air vent shall have a pilot operated elimination mechanism, ¼" orifice and have a self-cleaning mechanism. Air vent shall be high volume, Model No. 90 AC, CS manufactured by Wright-Austin.

2.10 CHILLED WATER PIPE WELLS

- A. All chilled water pipe wells shall be ¾" weld-o-let type welded to the steel piping.

2.11 VIBRATION ISOLATION

- A. Flexible pipe connectors shall be provided at chilled water pumps and chillers for vibration isolation.
- B. Flexible pipe connectors shall have annular corrugated seamless hose body with flanged carbon steel fittings and stainless steel braid.
- C. May use grooved joint flexible type couplings in lieu of flexible connectors at equipment connections. Place three couplings in close proximity to the vibration source.

2.12 BACKFLOW PREVENTERS

- A. Spring loaded check valves, Class 150, iron body, bronze trim, stainless steel spring, renewable composition disk, screwed, lug or flanged.

PART 3 EXECUTION

3.1 INSTALLATION AND APPLICATION

- A. Install specialties in accordance with manufacturer's instructions to permit intended performance.
- B. Support tanks inside building from building structure per manufacturer's instructions; coordinate with structural engineer. Paint support assembly.
- C. Where large air quantities can accumulate, provide enlarged air collection standpipes with air eliminators.
- D. Provide manual air vents at system high points and as indicated.
- E. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.
- F. Provide air separator on suction side of system circulation pump and connect to expansion tank.
- G. Provide valve drain and hose connection on strainer blow down connection.
- H. Provide pump suction fitting on suction side of base mounted centrifugal pumps. Remove temporary strainers after cleaning the systems.
- I. Support pump fittings with floor mounted pipe and flange supports or ceiling mounted supports.
- J. Provide relief valves on pressure tanks, low-pressure side of reducing valves, heat exchangers, and expansion tanks.
- K. Pipe relief valve outlet to nearest floor drain. Pipe backflow preventer to nearest floor drain.
- L. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas. Pipe the make up water to suction side of pump.
- M. Connect make-up water to suction side of the pump system.
- N. Install high volume air eliminator on top of air separator.
- O. Installation of hydronic piping and specialties shall not obstruct service access and chiller component removal.
- P. Provide auxiliary connection ports for emergency chiller. Ports shall consist of flanged, gear-operated valves with bolted blank-off flanges. Include the same in design documents.

END OF SECTION