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


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 \( \frac{1}{8} \)” 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 \( \frac{1}{8} \)” 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 \( \frac{1}{6} \)” or 1/16” stainless steel perforated screen equal to 2½ times pipe diameter area.
C. Size 5” and Larger:
   1. Basket pattern flanged iron body for 175 psig working pressure, with \( \frac{1}{8} \)” stainless steel perforated screen equal to 2½ times pipe diameter area.
   2. Fanged or grooved ductile iron body for 300 psig maximum working pressure, T pattern with \( \frac{1}{6} \)” 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