SECTION 23 2114 - HYDRONIC SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes.

1. Hydronic Specialties and Accessories
   a. Air/Dirt Removal Fittings
   b. Pressure Reducing Valves
   c. Pressure Relief Valves
   d. Make-up Water Assemblies
   e. Air Vents
   f. Strainers
   g. Combination Valves (Triple-Duty)
   h. Pump Suction Diffusers
   i. Pot-Type Bypass Filter Feeders
2. Expansion Tanks

B. Related Sections:

1. 23 0523 General Duty Valves
2. 23 0529 Pipe Hangers and Supports
3. 23 2113 Hydronic Piping.

1.2 PERFORMANCE REQUIREMENTS

A. Piping systems shall conform to ANSI and State rules for pressure piping where applicable. Welders and fitters shall be fully certified for work performed.

B. Safety valves and all pressure vessels shall bear the appropriate ASME label.

1.3 SUBMITTALS

A. Product Data: For each type of the following:

1. Hydronic specialties.

B. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 HYDRONIC SPECIALTIES

A. Air/Dirt Removal Fitting – Intended for mounting in main pipe and tappings for air vent and drain. Furnish a large capacity float type air vent equal to Hoffman No. 792 with a ball shutoff valve for installation on the vent connection.
1. Spirotherm #Spirovent VDT
2. Armstrong
3. B&G #CRS (Addendum 1 – 7/31/2023)
4. Grunfos
5. Thrush (Addendum 3 – 8/9/2023)

B. Pressure Relief Valves

1. System Make-up Water – Shall be equal to Bell & Gossett Model B7 (adjustable setting to 25 psi) / Model 7 (adjustable setting 25 to 60 psi), setting as indicated on the drawings.
2. Boilers – Shall be ASME rated for water relief, equal to Bell & Gossett No. 790 (3/4") / No. 1170 (1") / No. 3301 (1-1/2") / 4100 (2") with low inlet pressure check valve, setting as indicated on the drawings.

C. Water Make-up Assemblies – Intended for use in the heating hot water system shall be an external electric float switch equal to McDonnell & Miller No. 158, with low water switch and alarm bell, and a remote make-up valve, ¼ turn ball type, with bronze body and 115V electric operator equal to Watts EA350. Wiring between the float switch, the alarm bell and the make-up water valve shall be by the HVAC contractor.

D. Air Vents – Shall be <u>manual</u> type unless specifically noted to be automatic. Air vents shall be:

1. Large capacity automatic type for installation on boiler or air removal fitting, equal to Hoffman 792, 150 psig operating pressure rating. Provide a ball valve on the inlet pipe and pipe the outlet to the nearest drain.

2. Large capacity automatic type, 150 psig operating pressure rating, equal to Hoffman 78. For use on air handling unit coils and on main piping. Provide ball valve at inlet of each vent. Pipe outlet to nearest drain point with 1/8" ID copper tube.

3. Large capacity manual type – ½" ball valve for use on air handling unit coils and on main piping. Elbow down to facilitate catching water during venting.

4. Small capacity manual-automatic with screwdriver stop, 50 psi, equal to Hoffman 500, for use on room heating and cooling units, VAV unit heating coils and duct heating coils.

5. Small capacity manual type air vent – 1/4" ball valve, for use on room heating and cooling units, VAV unit heating coils and duct heating coils. Elbow down to facilitate catching of water during manual venting.

E. Strainers – Shall be 125 lb. w.s.p. "Y" pattern cast iron construction with removable stainless steel strainer element and screwed or flanged ends. Strainer elements shall be 20 mesh for 2" and smaller, 1/16" for 2-1/2", 3" and 4" and 1/8" for larger sizes.

F. Combination Triple Duty Valve – combination valves and devices such as Bell & Gossett Triple Duty Valve (check, balancing and shutoff) for installation on pump discharge are acceptable in lieu of individual components *or equal by Grundfos or Armstrong. (Addendum 3 – 8/9/2023)*

G. Pump Suction Diffusers – Intended for pump inlet condition enhancement.
1. Manufacturers
a. Bell & Gossett
b. Armstrong
c. Grundfos (Addendum 1 – 7/31/2023)
d. Thrush (Addendum 3 – 8/9/2023)

H. Pot-Type Bypass Filter Feeder – Intended to add small quantities of chemicals to the hot water systems where shown on the drawings and for side stream filtration. Five (5) gallon size equal to Neptune #FTF-5DB. Feeders shall be constructed for min. 150 psi and be complete with fill and valved bypass arrangement. Provide with 5 micron filter bags and dissolving cylinder.

2.2 EXPANSION TANKS

A. Expansion tanks for pressurization and expansion control of the water systems shall be pressurized ~~*diaphragm or*~~ *(Addendum 1 – 7/31/2023)* bladder type as indicated on the drawings, pre-charged to match the system make-up pressure.

B. Construction – Each tank shall be welded steel constructed in accordance with ASME requirements for 125 psi. The tank shall be fitted with a system pipe connection drain tapping and an integral heavy duty replaceable butyl bladder, to separate water from the pressurized air. Bladder type tank shall have a bottom drain tapping with plug and a flanged top opening for removal and reinstallation of the bladder. Tank shall be prime coat or finish painted. The tank shall be vertical with floor mounting ring. Tank sized for full acceptance volume.

C. Tank shall be vertical configuration and acceptance volume as indicated on the drawings.

D. Manufacturers
1. Bell & Gossett Series "B"
2. Armstrong #WX-L
3. Wessels #NLA
4. Grundfos (Addendum 1 – 7/31/2023)
5. Thrush (Addendum 3 – 8/9/2023)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Drawings (plans, schematics and diagrams) indicate the general location and arrangement of piping systems. Locations and arrangements of piping take into consideration pipe sizing and friction loss, pipe expansion, pump sizing and other design considerations; therefore, it is imperative that piping be installed as indicated.

B. Refer to Section 23 2113 Hydronic Piping for installation of piping and accessory devices and equipment.

C. Air vents shall be installed at all high points of piping and system, on each heating and cooling coil, and at other locations subject to air binding. Air vents shall be installed in locations accessible for servicing. A shutoff valve or cock on the inlet and drain tubing extending to a drain is required for each large capacity automatic vent. The drain tube shall be extended to a drain location (floor drain, janitor sink, etc.) or, in mechanical rooms, turned down over a clear area of the floor to afford notice by maintenance personnel.

D. Install strainers as indicated on the drawings. Provide a nipple and ball valve in the blow down connection of each strainer 2" and larger.

E. Vertical expansion tanks shall be floor set on a 4" high concrete base. Check and adjust the pre-charged pressure so that it matches the system make-up pressure.

END OF SECTION 23 2114