
Hydronic Piping Specialties

PART 1 - GENERAL

1.1 Submittals

- .1 **Shop Drawings/Product Data:** Submit shop drawings/product data sheets for all products specified in this Section. Shop drawings/product data sheets must confirm that the products proposed meet all requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 Pressure Relief Valves

- .1 ASME tested, rated, and certified, bronze or cast iron bronze fitted, 1725 kPa (250 psi) rated pressure relief valves, each capable of relieving the full output of the equipment it is associated with, and each factory set at 415 kPa (60 psi) unless otherwise specified. Acceptable products are:
 - .1 Bell & Gossett 3301/4100, or 790/1170;
 - .2 Dresser Industries "CONSOLIDATED";
 - .3 Spirax Sarco Ltd. SVI Series;
 - .4 McDonnell & Miller Models 250 and 260;
 - .5 Conbraco 10-600 Series;
 - .6 Watts Industries (Canada) Inc. 174A or 740.

2.2 Air Vents

- .1 **Automatic Air Vents:** Float actuated air vents, each complete with a semi-steel body and a cap, a stainless steel float assembly and seat, and a neoprene head. Acceptable products are:
 - .1 Spirax Sarco Ltd., Type 13 W for system working pressures to 1035 kPa (150 psi), 13 WH for system working pressures greater than 1035 kPa (150 psi);
 - .2 Armstrong International Inc. No. 1-AV.

2.3 Strainers

- .1 Cast iron wye shaped strainers, minimum 890 kPa (125 psi) rated and complete with a removable type 304 stainless steel screen with perforations sized to suit the application, and, for strainers 50 mm (2") diameter and larger, a blowdown pipe connection tapping. Acceptable products are:
 - .1 Spirax Sarco Ltd. Type IF-125 screwed or Type AF-250 flanged;
 - .2 Toyo Valve Co. Ltd. Fig. 380A screwed or Fig. 381 flanged;
 - .3 Victaulic Co. of Canada Style 732 or W732 "Vic-Strainer";
 - .4 Armstrong International Inc. A1 Series;
 - .5 Watts Industries (Canada) Inc. #77SCI;
 - .6 Mueller Steam Specialty Products Model 11M screwed or Model 758 flanged.

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2.4 Piping Alignment Guides

- .1 Prime coat painted black carbon steel pipe alignment guides sized and fabricated to suit the pipe size and the pipe insulation thickness. Acceptable products are:
 - .1 Senior Flexonics Ltd. Series PGT;
 - .2 E. Myatt & Co. Ltd. Fig. 1267;
 - .3 Empire Tool & Mfg. Inc. Fig 256;
 - .4 The Metraflex Co. Style IV.

2.5 Flexible Pump Connections

- .1 Flexible metal hose assemblies, each complete with annular corrugated unbraided type 321 stainless steel inner core, braided type 321 stainless steel hose, and a collar and flange at each end, all suitable for twice the working pressure of the system. Acceptable products are:
 - .1 Senior Flexonics Inc. A1 and A6 Series;
 - .2 The Metraflex Co. Model SST and "METRA-MINI".

2.6 Air Separator

- .1 Vortex type vertical air separator with side tangential inlet and outlet connections, a top air outlet connection, and bottom drain connection. The separator is to be constructed of cast iron or fabricated steel for a pressure of 1105 kPa (160 psi) at 180°C (350°F) in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code.
- .2 Acceptable products are:
 - .1 Armstrong Fluid Technology Model "VA";
 - .2 Bell & Gossett "Rolairtrol";
 - .3 Taco Canada Ltd. "Vortech".

2.7 Expansion Tank

- .1 Replaceable bladder type, factory pressurized expansion tank with permanent separation of air and water, as per the drawing schedule and complete with:
 - .1 a steel pressure tank suitable for a working pressure of 870 kPa (125 psi) at 115°C (240°F), constructed and stamped in accordance with the ASME Code for Unfired Pressure Vessels and complete with a system connection, drain connection, air charging valve, and a red oxide primer finish;
 - .2 a heavy-duty butyl rubber (EDPM) bladder;
 - .3 a tapping for installation of a pressure gauge;
 - .4 for horizontal tanks only, mounting saddles supplied loose;
 - .5 Acceptable products are:
 - .1 Armstrong Fluid Technology Series "AX-V" Series "L";
 - .2 Bell & Gossett Series "B" (ASME);

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- .3 Taco Canada Ltd.;
- .4 Amtrol "Extrol".

2.8 Glycol Solution Mixing and Storage Tank

- .1 Package type glycol solution mixing, storage and automatic feed assembly designed to maintain minimum system pressure levels and complete with:
 - .1 a round, polyethylene or polypropylene tank sized to suit system capacity, complete with a solution level scale in litres and Imperial gallons, removable cover, and a welded steel angle stand assembly with legs, pump shelf, and control panel bracket, all factory finished with enamel;
 - .2 a factory pre-piped minimum 1/3 HP, 115 volt, 1 phase rotary bronze gear pump with capacity and pressure differential to suit system requirements, factory wired to the control panel, mounted on a shelf integral with the steel stand assembly, and complete with shut-off valve and strainer;
 - .3 a tank pressure relief valve with discharge piped back into the tank;
 - .4 a tank low level switch;
 - .5 a pressure gauge;
 - .6 a Honeywell #L404A "Pressurtrol" or equal pipe mounting differential pressure switch with a 100-1000 kPa (15-150 psi) range;
 - .7 a 115 volt, 1 phase, factory mounted and prewired control panel with an EEMAC 2 enamelled steel enclosure, designed to control and operate the glycol gear pump either manually or automatically to pump glycol solution into the system, and to stop the pump and initiate on audible/visual alarm if a low glycol solution level occurs in the tank, and complete with:
 - .1 terminal blocks for power and control wiring connections;
 - .2 a H-O-A switch with green "Power On" indicator light;
 - .3 a 120 volt/12 volt control transformer;
 - .4 a low glycol solution level alarm buzzer with silencing switch, an alarm light which remains illuminated until the low-level switch is reset, and an alarm push-to-test button;
 - .5 dry contacts for building automation system alarm annunciation.
- .2 Acceptable products are:
 - .1 Ashland Water Technologies Model 5800;
 - .2 Bell & Gossett Series GMU;
 - .3 Armstrong Fluid Technology GLA Standard Series.

2.9 Glycol

- .1 Propylene glycol blended with Nitrite based corrosion inhibitors.

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2.10 Buffer Tank

- .1 Steel pressure tank suitable for a working pressure of 870 kPa (125 psi) at 115°C (240°F), constructed and stamped in accordance with the ASME Code for Unfired Pressure Vessels and complete with 2 system connections with ASME 150 lb. rated flanges, drain connection, and a red oxide primer finish.
- .2 Acceptable products are:
 - .1 Amtrol;
 - .2 Armstrong Fluid Technology;
 - .3 Taco Canada Ltd.

PART 3 - EXECUTION

3.1 Installation of Pressure Relief Valves

- .1 Provide factory set pressure relief valves where shown. Pipe the discharge of each water piping relief valve to drain unless otherwise shown or specified.
- .2 Pipe the discharge of each glycol solution piping relief valve back to the system expansion tank or return piping.
- .3 Confirm relief valve settings.

3.2 Installation of Air Vents

- .1 Provide an air vent in piping mains at all high points, at equipment connections, and wherever else shown and/or specified. Equip each air vent with a ball type shut-off valve. Install vents in 100 mm (4") dia. and larger piping and all vents in mechanical rooms in accordance with the drawing detail.
- .2 Provide 9 mm (3/8") dia. copper drain piping from each automatic air vent to nearest suitable drain and terminate so the discharge is visible. Identify the drain piping.

3.3 Installation of Strainers

- .1 Provide strainers in piping where shown. Locate strainers so that baskets are easily accessible and removable. Clean strainer baskets during and after piping system flushing and cleaning is complete, and before water quantity balancing commences.

3.4 Installation of Air Separator

- .1 Provide an air separator in piping where shown and connect with valved inlet and outlet piping.
- .2 Extend valved blowdown piping from the bottom pipe connection tapping to the nearest floor drain location.
- .3 Equip the top pipe connection tapping with an automatic air vent and piping as detailed.

3.5 Installation of Expansion Tank

- .1 Provide an expansion tank where shown.
- .2 Secure the tank stand to a concrete housekeeping pad by means of machine bolts.

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Connect the tank with system piping as indicated.

- .3 Connect the tank with system piping as indicated. Extend a drain line from the tank piping as indicated and terminate the drain line with a drain valve. Provide an air vent.
- .4 Provide a water make-up connection line complete with relief valve and pressure gauge and connect to system piping as shown. Terminate the make-up piping for connection to domestic cold water piping as part of the work of the mechanical work Section entitled Domestic Water Piping and Valves. Check relief valve operation and adjust as required.
- .5 Check the tank air charge and adjust to suit the system.

3.6 Installation of Glycol Solution Mixing – Storage Tank

- .1 Provide a mixing - storage tank and feed assembly for each glycol solution circulating system as shown.
- .2 Secure the tank stand to a concrete housekeeping pad. Connect with system piping. Refer to the drawing detail.
- .3 Fill the tank with, unless otherwise specified, a solution of 50% water, 50% propylene glycol, and test the solution to confirm proper concentrations.
- .4 When installation is complete, test operation of the assembly, including alarms, and adjust as required. Adjust the pressure switch to suit the glycol solution circulating system pressure.

3.7 Installation of Buffer Tank

- .1 Provide a buffer tank where shown.
- .2 Secure the tank stand to a concrete housekeeping pad by means of machine bolts. Connect the tank with system piping.
- .3 Connect the tank with system piping. Extend a drain line from the tank piping and terminate the drain line with a drain valve. Provide an air vent.

3.8 Installation of Flexible Piping Connections

- .1 Provide flexible connections in piping connections to equipment where shown and/or as required to prevent vibration transmission to the piping distribution system.
- .2 Install in accordance with the manufacturer's instructions.

END OF SECTION