

HYDRONIC SPECIALTIES

1. GENERAL

1.1 Summary

.1 Section Includes:

- .1 The supply and installation of Hydronic Specialties Equipment.

1.2 References

.1 American Society of Mechanical Engineers (ASME).

- .1 ASME, Boiler and Pressure Vessel Code.

.2 ASTM International (ASTM).

- .1 ASTM A 47/A 47M, Specification for Ferritic Malleable Iron Castings.

- .2 ASTM A 278M, Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures up to 650 degrees F (345 degrees C).

- .3 ASTM A 516/A 516M, Specification for Pressure Vessel Plates, Carbon Steel, for Moderate - and Lower - Temperature Service.

- .4 ASTM A 536, Specification for Ductile Iron Castings.

- .5 ASTM B 62, Specification for Composition Bronze or Ounce Metal Castings.

.3 Canadian Standards Association (CSA).

- .1 CSA B51, Boiler, Pressure Vessel, and Pressure Piping Code.

1.3 Submittals

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Closeout Submittals:

- .1 Submit maintenance data in accordance with Section 01 33 00 - Submittal Procedures.

2. PRODUCTS

2.1 Material

2.2 Manual Air Vents

- .1 Provide manual air vents with 25 mm or line diameter pipe which ever is greater to form air collection chamber. Collection chamber to be 150 mm high.

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2.3 Automatic Air Vents

- .1 Provide automatic air vents where shown on Drawings. Vents shall be non-ferrous construction, rated for 1000 kPag (145 psig) and 116°C (240°F) operating temperature.
- .2 Standard of Acceptance: Bell & Gossett model 7 or 87.

2.4 High Capacity Automatic Air Vent

- .1 High capacity float vent for liquid systems, cast iron body, NPS ¾" connection, 1050 kPa maximum operating pressure, 121°C maximum operating temperature.
- .2 Air flow performance characteristics: 7.0 L/s @ 70 kPa and 11.0 L/s @ 275 kPa.
- .3 Standard of acceptance: Amtrol Model 747

2.5 Rubber Expansion Joints

- .1 Rubber expansion joint with single spherical bellow design constructed from EPDM rubber inner liner and outer cover, with embedded nylon cord reinforcement, wire reinforced flanged collars and 1475 kPa pressure rating @ 21°C.
- .2 Minimum allowable compression: 15 mm.
- .3 Minimum allowable extension: 9 mm.
- .4 Minimum lateral movement: 12 mm.
- .5 Minimum angular movement: 15 degrees.
- .6 Standard of acceptance: Senior Flexonics, Style 101.

2.6 Automatic Flow Control Valve

- .1 General Specifications
 - .1 Automatic flow control valve cartridges shall automatically control flow rates with $\pm 5\%$ accuracy over an operating pressure differential range of at least 14 times the minimum required for control. Four operating pressure ranges shall be available with the minimum range requiring less than 3 PSID to actuate the mechanism.
 - .2 Valve internal control mechanism shall consist of a stainless steel one-piece cartridge with segmented port design and full travel linear coil spring.
 - .3 Manufacturer shall be able to provide certified independent laboratory tests verifying accuracy of performance.
 - .4 All flow control valve cartridges shall be warranted by the manufacturer for five years from date of sale.
- .2 Body Styles

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.1 Wafer Style Valves

- .1 Class 150 Wafer valves shall consist of a gray iron (ASTM A126-61T, Class 30) body and stainless steel flow control cartridge assemblies; shall be rated at 200 PSI/250°F; shall be mechanically compatible with ANSI B16.5-1968 150 lb. steel flanges; valve shall be supplied with dual pressure or pressure/temperature test valves for verifying accuracy of flow performance for all sizes; shall be permanently marked to show direction of flow, shall have body tag to indicate model number and flow rate; shall have single or multiple, parallel-installed stainless steel cartridge assemblies to provide rated flow rate; shall include all plated steel studs required for installation.

.3 Accessories

- .1 Identification tags shall be available for all valves; tags shall be indelibly marked with flow rate, model number, zone identification: tags shall be 3" x 3" aluminum.
- .2 Pressure/temperature test valves shall be available at 1/4" NPT for measuring pressure or temperature in fluid systems.

.4 Standard of Acceptance: Griswold Controls Automatic Flow Control Valves

2.7 Triple Duty Valve

- .1 For base mounted or inline pump discharge application, performs the functions of a nonslam check valve, throttling valve, shut-off valve and calibrated balancing valve. Equip with brass readout valves (with integral check valves) to read differential pressure across valve.
- .2 Cast iron, bronze seat, replaceable bronze disc with EPDM insert.
- .3 Up to 50 mm: NPT connections, 1200 kPa (175 psi) working pressure, brass stem, chatter preventing SS spring.
- .4 Over 50 mm: Flanged connections, 1200 kPa (175 psi) working pressure, stainless steel stem and chatter preventing spring.

2.8 Suction Diffuser

- .1 For base mounted or floor mounted vertical inline pumps.
- .2 Up to 50 mm: Cast iron construction, NPT connections.
- .3 Over 50 mm: cast iron straightening fitting, stainless steel combination diffuser.
- .4 Strainer: with built-in, disposable 1.19 mm mesh, low pressure drop screen and NPS 1 blowdown connection.
- .5 Permanent magnet particle trap.
- .6 Full length straightening vanes.
- .7 Pressure gauge tapings.

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- .8 Adjustable support leg.

2.9 Circuit Balancing Valves

- .1 Valves up to 50 mm: Brass body, stem and disk with reinforced nylon or ABS handwheel, Maximum rated pressure 2068 kPa (300 psi) and operation temperature from -20°C to 150°C.
- .2 Valves 65 mm to 150 mm: Ductile iron body, bronze disk, high strength engineered resin seat, brass stem, BUNA N. & EPDM "O" rings and drain tapings. Maximum rated pressure 1724 kPa (250 psi) and maximum operation temperature to 110°C.
- .3 Valves to be complete with calibrated venturi and metering taps.

2.10 Pot Feeder

- .1 Chemical by-pass feeder with 19 litre capacity, 20.7 Bar (300 psi) working pressure @ 93°C (200°F), 10 gauge steel tank shell, 9 gauge steel tank head, 100 mm diameter fill cap with buna N seal rings.
- .2 Standard of acceptance: GE Neptune DBF-5HP.

2.11 Air Separators

- .1 Tangential air separators shall be tangential style steel construction air separator with low velocity vortex action. Maximum working pressure rated 1034 kPa (150 psi) and maximum operating temperature 177°C (350°F). Removable stainless steel strainer, blowdown connection and NTP vent connection.
- .2 Performance: Refer to Section 23 06 00 – Schedules for HVAC.

2.12 Flow Indicators

- .1 Inline flow indicator, cast bronze body with threaded ends, with ABS indicator paddle with tempered glass window on each side.
- .2 Standard of acceptance: W E Anderson SFI-300 Series

3. EXECUTION

3.1 General

- .1 Install as indicated and to manufacturer's recommendations.
- .2 Run drain lines and blow off connections to terminate above nearest drain.
- .3 Maintain proper clearance to permit service and maintenance.
- .4 Should deviations beyond allowable clearances arise, request and follow Contract Administrator's directive.

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- .5 Check shop drawings for conformance of all tapings for ancillaries and for equipment operating weights.

3.2 Air Vents

- .1 Provide manual type at system high points and convection type heating units.
- .2 Install gate valve on automatic air vent inlet. Run discharge to nearest drain.

3.3 High Capacity Automatic Air Vents

- .1 Install at high points of systems shown on drawings in the 7th floor mechanical rooms only.
- .2 Install full-port ball valve on air vent inlet.

3.4 Rubber Expansion Joints

- .1 Install on inlet and outlet pipes of chillers as indicated on drawings.

3.5 Automatic Flow Control Valve

- .1 Install on inlet of condenser pipe of chillers as indicated on drawings.

3.6 Triple Duty Valve

- .1 Install on outlet to pumps where shown on drawings.
- .2 Balance valve to flows indicated on drawings or specifications.

3.7 Suction Diffusers

- .1 Install on inlet to pumps where shown on drawings.
- .2 If equipped with strainer, ensure clearance for removal of basket.

3.8 Circuit Balancing Valves

- .1 Install valves up to 50 mm five pipe diameters downstream from a fitting or if a valve is located downstream from a circulation pump, allow ten pipe diameters from pump discharge.
- .2 Install valves 65 mm to 150 mm five pipe diameters downstream from a fitting or if a valve is located downstream from a circulation pump, allow ten pipe diameters from pump discharge end. In both situations provide two pipe diameters downstream from the valve.

3.9 Air Separator

- .1 Provide on suction side of system circulation pump as shown on drawings.
- .2 Provide automatic air vent with isolation valve.

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3.10 Pot Feeder

- .1 To replace existing funnel-fill type pot feeder in oil storage room.
- .2 Provide drain valve. Mount pot feeder at adequate height for drain outlet to drain into existing drain.
- .3 Provide isolation valves on inlet and outlet of pot feeder.

END OF SECTION