

Suggested Specifications

Price Factory Mounted Piping Packages Division 23 – Heating, Ventilating, and Air Conditioning Section 23 21 13 – Hydronic Piping

The following specification is for a defined application. Price would be pleased to assist in developing a specification for your specific need.

PART 1 – GENERAL

1.01 Section Includes

- A. Factory Mounted Piping Packages

1.02 Related Requirements

- A. Section 01 40 00 - Quality Requirements
- B. Section 01 74 19 - Construction Waste Management and Disposal
- C. Section 01 78 00 - Closeout Submittals
- D. Section 01 79 00 - Demonstration and Training
- E. Section 23 09 93 - Sequence of Operations for HVAC Controls.
- F. Section 23 21 14 - Hydronic Specialties: Connections to heating coils.
- G. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 Administrative Requirements

- A. Pre-installation Meeting: Conduct a pre-installation meeting one week prior to the start of the work of this section, and require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and efficient manner.

1.04 Submittals

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data shall be provided with data indicating configuration, general assembly, and materials used in fabrication.
- C. Shop Drawings shall indicate configuration, general assembly, and materials used in fabrication, and electrical characteristics and connection requirements.
- D. Manufacturer's Installation Instructions shall indicate support and hanging details, installation instructions, recommendations, and service clearances required.
- E. Project Record Documents shall record actual locations of units and controls components and locations of access doors.
- F. Operation and Maintenance Data shall include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists. Include directions for resetting constant-volume regulators.
- G. Manufacturer's warranty shall be submitted and ensure forms have been completed in Owner's name and registered with manufacturer.
- H. Maintenance Materials shall be furnished for the Owner's use in maintenance of the project.

1.05 Quality Assurance

- A. Manufacturer Qualifications shall be specified in this section, with minimum ten years of documented experience.
- B. Product Listing Organization Qualifications: The manufacturer shall be listed with an organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 Warranty

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 18 month manufacturer warranty from date of shipment for factory mounted piping packages.

PART 2 – PRODUCTS

2.01 Factory Mounted Piping Packages

- A. Description:
 - 1. Furnish and install Price factory mounted piping packages in the sizes and configurations as indicated on the mechanical plans to a maximum of 1" diameter.
- B. Basis of Design: Price Industries, Inc.
 - 1. Nexus
 - 2. IMI Flow Design
- C. Quality Assurance
 - 1. Factory mounted piping packages shall be leak tested at 120 psi.
 - 2. A nitrogen sniff test shall be conducted to test for leakage at all joints and connections.
- D. Temperature Control Valve (TCV)
 - 1. (Optional) 2-way TCV provided by Price
 - a. Basis of Design: Belimo
 - b. Valve
 - i. Angle of Rotation – 90
 - ii. Close-off pressure – 75 psi
 - iii. End Fitting – NPT

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- iv. Trim – Chrome plated brass
 - v. Available in 0.5", 0.75" and 1" diameters
 - c. Actuator
 - i. Non-fail-safe
 - ii. Degree of Protection – IP40, NEMA 2
 - iii. Electrical connection – cable
 - iv. Voltage – AC/DC 24v
 - v. Available control types
 - 1. On/Off
 - 2. Floating Point
 - 3. Modulating
 - 2. (Optional) 3-way TCV provided by Price
 - a. Basis of Design: Siemens
 - b. Valve
 - i. Angle of Rotation – 90
 - ii. Close-off pressure – 200 psi
 - iii. End Fitting – NPT
 - iv. Trim – Chrome plated brass
 - v. Available in 0.5", 0.75" and 1" diameters
 - c. Actuator
 - i. Non-fail-safe
 - ii. Electrical connection – cable
 - iii. Voltage – AC/DC 24v
 - iv. Available control types
 - 1. On/Off
 - 2. Floating Point
 - 3. Modulating
 - 3. (Optional) 2-way or 3-way TCV/PICV provided by others and factory mounted
- E. Balancing Valve
 - 1. (Optional) Automatic Balancing Valve
 - a. The flow cartridge's non-clogging single orifice design shall include no metal-to-metal contact, no segmented ports, no rolling diaphragm, and incorporate a tapered profile flow nozzle and metering disk controlled by a pressure compensating spring.
 - b. The flow cartridge shall be a single assembly, constructed with stainless steel moving parts and be accessible without removing the valve from the piping. Flow cartridges constructed with composite or rubber materials are not acceptable.
 - c. The flow cartridge shall be factory flow tested and calibrated to maintain accuracy of $\pm 5\%$; the accuracy shall be maintained over a standard operating range of 2 - 45 PSID. Cartridges that prevent flow above the maximum operating range are not acceptable.
 - d. The flow cartridge shall be clearly inscribed with the designed manufactured flow rate. Cartridges that are not marked with the manufacture designed flow rate or use a coding system are not acceptable.
 - e. Valves shall be a forged brass Y-pattern body with integrated ball valve, (2) pressure/temperature test ports, blowout proof stem with dual FKM o-ring seals, interchangeable union end with FKM o-ring seal, hard chrome plated solid ball with Teflon™ seats, and rated at 600 PSI WOG, 325 degrees F. Valves shall be available with NPT or SWT connections: like Nexus UltraMatic™
 - 2. (Optional) Manual Balancing Valve
 - a. Manual Flow Control devices shall be Multi-Turn balancing type accurate to at least $\pm 5\%$.
 - b. MFCV shall be forged brass Y-pattern globe style and valves, (2) pressure/temperature test ports, visual turns indicator, locking handle tag, blowout proof stem with dual FKM o-ring seals, interchangeable union end with FKM o-ring seal, hard chrome plated ball with Teflon™ seats, and rated at 600 PSI WOG, 325 degrees F. Valves shall be available with NPT or SWT connections; like Nexus UltraMB™ (Model MB.)
 - c. Optional extended pressure and temperature test plugs, manual air vents and handles shall be available. Extended handles shall not break the vapor barrier when operated.
- F. Y-strainer
 - 1. Y-strainer shall be complete with ball valve, union, and pressure/temperature port.
 - 2. Valve shall be rated for 400 psig at 250 °F
 - 3. Valve body shall be manufactured from hot forged brass (ASTM B283), rated for 600 WOG, 325 °F and contain interchangeable unions ends.
 - 4. End pieces shall be manufactured from hot forged brass (ASTM B283).
 - 5. Handle and Nut shall be zinc plated.
 - 6. Ball valve shall be hard chrome plated brass or stainless-steel (optional) and ball seals shall be Teflon.
 - 7. Shaft shall be brass or stainless-steel (optional) and blowout proof.
 - 8. Shaft seal, union seal and cap seal shall be FKM O-rings.
 - 9. Filter screen shall be 304 stainless steel, removable, 20 mesh/40 mesh (optional)
 - 10. (Optional) Extended handled and extended pressure/temperature port.
- G. Union
 - 1. Union body shall be hot forged brass (ASTM B283), rated for 600 WOG, 425 °F and contain interchangeable union ends. Union body shall contain (3) ¼" FNPT option ports.
 - 2. Union end pieces shall be hot forged brass (ASTM B283) and union seal shall be FKM O-ring.
 - 3. Union shall come equipped with Pressure/Temperature port.
 - 4. (Optional) Extended ports.
 - 5. (Optional) Manual Air Vent.
- H. (Optional) Stainless Steel Braided Flex Hose

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1. Hoses shall be made of stainless-steel braid over Kevlar reinforced EPDM. Hoses constructed with thermoplastics or EPTF is not acceptable.
2. Hoses shall be designed for a minimum 400 PSIG working pressure and 5 to 248 degrees F. operating temperature. Minimum burst pressure shall be four times the working pressure.
3. Hoses shall meet or exceed ASTM E 84-00 fire rating for building materials (NFPA 255, ANSI/UL 723 & UBC 8-1). Hoses rated UL 94 V-O for plastics used in manufacturing of consumer electronic products is not acceptable.
4. Hoses shall be of double swivel design.
5. End fittings shall be made of brass. Swivel connections are to be sealed with an EPDM washer or FKM o-ring. Metal to metal seals or fiber gasket seals are not acceptable.
6. Hose adapters shall be provided where necessary. Hose adapters shall be brass with MNPT threads pre-coated with LocTite 516 thread sealant, Copper sweat connections.
7. Ferrules shall be stainless steel.
8. Hoses shall be permanently marked so that the manufacturer of the hose is easily identified. Hoses shall also be permanently marked with pressure rating, temperature rating and date of manufacture.

PART 3 – EXECUTION

3.01 Examination

- A. Verify that conditions are suitable for installation.
- B. Verify that field measurements are as shown on the drawings.

3.02 Installation

- A. Install the terminal units in accordance with the manufacturer's instructions.
- B. Provide ceiling access doors or locate units above easily removable ceiling components.
- C. Support the terminal units individually from the structure.
- D. Embed anchors in concrete in accordance with ASTM E488/E488M.
- E. Install heating coils in accordance with Section 23 82 00.
- F. Verify that electric power is available and of the correct characteristics.

3.03 Adjusting

- A. Ensure the damper operator attached to the assembly allows full modulation of flow range from 100 percent of design flow to zero.

3.04 Field Quality Control

- A. See Section 01 40 00 - Quality Requirements, for additional quality requirements.

3.05 Cleaning

- A. See Section 01 74 19 - Construction Waste Management and Disposal for additional cleaning requirements.

3.06 Closeout Activities

- A. See Section 01 78 00 - Closeout Submittals for closeout submittals.
- B. See Section 01 79 00 - Demonstration and Training for additional closeout requirements.