

Suggested Specifications

Price Single Duct Bypass Terminal Units

Division 23 – Heating, Ventilating, and Air Conditioning

Section 23 36 00 – Air Terminal Units

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. Single-duct bypass air units.

1.02 Related Requirements

- A. Section 23 09 93 - Sequence of Operations for HVAC Controls.
- B. Section 23 21 13 - Hydronic Piping: Connections to heating coils.
- C. Section 23 21 14 - Hydronic Specialties: Connections to heating coils.
- D. Section 23 31 00 - HVAC Ducts and Casings.
- E. Section 23 33 00 - Air Duct Accessories.
- F. Section 23 37 00 - Air Outlets and Inlets.
- G. Section 23 82 00 - Convection Heating and Cooling Units: Air coils.
- H. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 Reference Standards

- A. All referenced standards and recommended practices in this section pertain to the most recent publication thereof, including all addenda and errata.
- B. AHRI 410 - Standard for Forced-Circulation Air-Cooling and Air-Heating Coils
- C. AHRI 880 - Performance Rating of Air Terminals
- D. AHRI 885 - Procedure for Estimating Occupied Space Sound Levels in the Application of Air Terminals and Air Outlets, Appendix E
- E. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material)
- F. ASTM E488/E488M - Standard Test Methods for Strength of Anchors in Concrete Elements
- G. NFPA 70 - National Electrical Code
- H. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; National Fire Protection Association
- I. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; Underwriters Laboratories Inc.

1.04 Administrative Requirements

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

1.05 Submittals

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product data shall be provided indicating configuration, general assembly, and materials used in fabrication, including catalog performance ratings that indicate airflow, static pressure, NC designation, electrical characteristics and connection requirements.
- C. Shop drawings shall indicate configuration, general assembly, materials used in fabrication, and electrical characteristics and connection requirements.
 - 1. The manufacturer shall include schedules listing discharge and radiated sound power level for each of second through seventh octave bands (125 to 4000 Hertz) at specified differential static pressures.
- D. Certificates shall be issued to certify that air coil capacities, pressure drops, and selection procedures meet or exceed specified requirements or coils are tested and rated in accordance with AHRI 410.
- E. Manufacturer's installation instructions shall indicate support and hanging details, installation instructions and recommendations.
- F. Project record documents shall record actual locations of units and controls components and locations of access doors.
- G. Operation and Maintenance data shall include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts lists.
- H. Manufacturer's warranty shall be submitted and shall ensure forms have been completed in Owner's name and registered with manufacturer.
- I. Maintenance materials shall be furnished for the Owner's use in maintenance of the project.

1.06 Quality Assurance

- A. Manufacturer qualifications shall be specified in this section, with a 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.

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1.07 Warranty

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 18 month manufacturer warranty from date of shipment for air terminal units, integral sound attenuators, and integral controls.

PART 2 – PRODUCTS

2.01 Single Duct Bypass Terminal Units

- A. Basis of Design: Price Industries, Inc.
 1. Bypass Units: LGB (direct digital controls).
- B. Performance Requirements:
 1. The assemblies shall be pressure dependent and shall reset to any airflow between zero and the maximum cataloged air volume. Sound ratings of air distribution assemblies: Not to exceed ____ NC at ____ inches water gauge inlet static pressure, with a downstream static pressure of ____ inches water gauge.
 2. Use attenuation values found in AHRI 885.
- C. General:
 1. Furnish and install Price model LGB low pressure gate bypass terminal units. The terminal units shall be factory-assembled, variable air volume control bypass units, rated in accordance with AHRI 880.
- D. Construction:
 1. The unit casing shall be constructed of a minimum 22 gauge, 0.032 inch galvanized steel.
 2. The casing shall be acoustically and thermally lined with minimum 0.50 inch, dual-density insulation, meeting the requirements of NFPA 90A, UL 181, ASTM C1338, and ASTM C1071.
 3. Units shall incorporate a gate valve with polyethylene bearings which slide in a metal track. Single blade pivoting dampers will not be accepted.
 4. Units shall include integral inlet and bypass balancing dampers for field adjustment.
 5. Static pressure taps shall be provided to facilitate balancing.
 6. A minimum air volume stop shall be provided for field adjustment.
- E. Options:
 1. Discharge Attenuator:
 - a. The terminal unit shall be supplied with a separate [three foot] or [five foot] discharge attenuator to decrease discharge sound power levels.
 2. Hot Water Heating Coil:
 - a. The hot water coil casing shall be constructed from a minimum 22 gauge, 0.032 inch galvanized steel, factory-installed on the terminal discharge with slip-and drive attachment for downstream ductwork.
 - b. An optional gasketed and insulated access door shall be provided, located on bottom of unit.
 - c. Coil handing shall be specified as [right hand] or [left hand] when looking into the coil inlet in the direction of airflow.
 - d. The water coil fins shall be 0.0045 inch aluminum fins, mechanically-bonded to seamless 0.50 x 0.016 inch copper tubes.
 1. Fins shall be formed in a high heat transfer sine wave configuration.
 2. Standard coil shall be constructed of 10 fins-per-inch fin configuration.
 - e. The water coil shall be leak tested to a minimum 390 pounds per square inch, with a minimum burst pressure of 1800 pounds per square inch.
 - f. The water coil shall be certified in accordance with AHRI 410 and units shall bear an AHRI 410 label.
- F. Electrical Requirements:
 1. The bypass units shall be supplied with a single-point power connection.
 2. The bypass unit equipment wiring shall comply with the requirements of NFPA 70.
- G. Controls:
 1. See Section 23 09 13 - Instrumentation and Control Devices for HVAC: Thermostats and actuators for controls requirements.
- H. Controls Sequence:
 1. See Section 23 09 93 - Sequence of Operations for HVAC Controls for controls sequence requirements.

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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 manufacturer's instructions.
- B. Install the inlets of air terminal units and airflow sensors a minimum of three duct diameters from elbows, transitions, and duct takeoffs.
- C. See drawings for the size(s) and duct location(s) of the air terminal units.
- D. Provide ceiling access doors or locate units above easily removable ceiling components.
- E. Support units individually from the structure.
- F. Embed anchors in concrete in accordance with ASTM E488/E488M.
- G. Do not support from ductwork.
- H. Connect the terminals to the ductwork in accordance with Section 23 31 00.
- I. Install heating coils in accordance with Section 23 82 00.
- J. Verify that electric power is available and of the correct characteristics.

3.03 Adjusting

- A. Ensure damper operator attached to 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 requirements.

3.05 Closeout Activities

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