

SPECIFICATION

GENERAL

Furnish and install Tuttle & Bailey model DDV, dual duct terminal units of sizes and capacities scheduled or as shown on plans. Terminals shall be certified under the ARI Standard 880 Certification Program and bare the ARI Seal. Integral sound attenuators are a standard feature on the DDV.

CONSTRUCTION

Casing

1. Unit casing shall be constructed of not less than 22 gauge ASTM-A-525 galvanized steel with round inlet collars of the proper diameter and rectangular slip and drive discharge openings.
2. Unit casing shall be constructed of not less than 20 gauge ASTM-A-525 galvanized steel with round inlet collars of the proper diameter and rectangular slip and drive discharge openings.

Insulation

1. 1/2" Dual Density - Interior surface of unit casing is to be thermally and acoustically lined with a 1/2" thick fibrous glass blanket with a black top layer and a green core. The insulation is to comply with NFPA 90A, NFPA 90B, UL 181, ASTM C 1071 and have a 1.9 R value. This insulation is glued to the terminal unit, and all exposed edges are to be sealed.
2. 1" Dual Density - Interior surface of unit casing is to be thermally and acoustically lined with a 1" thick fibrous glass blanket with a black top layer and a green core. Complies with NFPA 90A, NFPA 90B, UL 181 and ASTM C 1071. The R value is 3.8. This insulation is glued to the terminal unit, and all exposed edges are to be sealed.
3. Insul-Guard™ - Interior surface of unit casing is to be thermally and acoustically lined with a 13/16" rigid duct board, resin bonded fibrous glass board, with a tough, damage-resistant, flame retardant and a reinforced aluminum foil facing. Complies with NFPA 90A, NFPA 90B, UL 181 and UL723. The R value is 3.5. This insulation is to be glued to the terminal unit, and all exposed edges are to be sealed with foil tape or metal strips.
4. No Lining - The terminal unit is to be supplied with no acoustical or thermal insulation.

5. Enviroseal™ - Interior surface of unit casing is to be thermally and acoustically lined with a 3/8" engineered polymer foam, fiber free insulation. Complies with NFPA 90A, NFPA 90B, UL 181 and ASTM C 534. The R value is 1.5 at 75 °F. This insulation is glued and riveted to the terminal unit.

Sensor

The air flow sensor shall be a Tuttle & Bailey Flo-Cross® and shall sample velocity profiles by a design incorporating four opposing sensing arms. Each arm shall have three upstream and three downstream air sensing ports located on concentric rings of equal area. A center chamber shall connect the sensing arms and average diverse flow signals. Baffles integral to the sensing arms shall amplify the duct velocity pressure by a nominal three times to create an accuracy of +/-5% throughout the catalog operating range of the terminal units. This construction shall be applied to both the total and static pressure sensing. Sensor requires one-half of inlet diameter of straight duct.

Damper Assembly

The round damper assembly shall be constructed of two 22 gauge galvanized steel blades sandwiched around an integral elastomeric seal to provide minimum leakage. Damper blade will have a maximum angular travel of 90° to provide improved linearity and flow characteristics. Damper bearings shall be Delrin type for noise free operation requiring no lubrication. Two piece cast aluminum shaft shall have an integral marker to indicate the damper position. Stickers and other removable position markers are not acceptable.



SPECIFICATION

Connections

Units shall incorporate a single point electrical connection. All electrical components shall be UL/ETL recognized and installed in accordance with the National Electric Code. All electrical components are to be mounted in a NEMA 1 control enclosure.

Control Options

1. Pneumatic: The terminals shall be equipped with pressure independent pneumatic controls which can be reset to modulate airflow within the cataloged airflow range. Air volume controllers, span and reset start point must be adjustable from 0-10 psig. Each controller shall be field convertible for direct or reverse acting. Total air consumption for controls shall not exceed 1.2 SCFH at 20 psig. Control devices (controller & actuator) shall be provided by the terminal manufacturer. Control devices shall be factory calibrated. Flow measuring taps and flow curves shall be supplied with each terminal for field balancing air flow. All pneumatic tubing shall be UL listed fire retardant (FR) type.
2. Analog Controls: The terminal manufacturer shall provide pressure independent electronic analog controls which can be reset to modulate airflow within the cataloged airflow range. The air volume controller shall have constant 2°F reset span regardless of minimum and maximum airflow limit. Air volume controller/actuator and thermostat are by terminal manufacturer. Control devices shall be factory calibrated. All pneumatic tubing shall be UL listed fire retardant (FR) type.
3. DDC, Factory Mounting of FMA Controls Supplied By Others: The terminals shall be equipped with pressure independent direct digital controls supplied by the control contractor and mounted by the terminal unit manufacturer. Control contractor shall provide data sheets on all components to be mounted, indicating component dimensions, mounting hardware and method to the terminal manufacturer. Control packages illustrating wiring and piping diagrams shall be supplied by the terminal manufacturer. Controls shall be compatible with pneumatic inlet velocity sensors supplied by the terminal manufacturer. The airflow sensor shall be Tuttle & Bailey Flo-Cross® only. Controls shall be field set by control contractor for the scheduled minimum and maximum flow rates. Unit operation shall be verified by dynamic checkout, operated on a fan system using statistical process control methods. Bench calibration only of controls shall

not be acceptable. Flow curves will be supplied with each terminal for field balancing air flow. All pneumatic tubing shall be UL listed fire retardant (FR) type. Each terminal shall be equipped with labeling showing unit location, size, and scheduled CFM.

4. Analog or DDC Controls, Field Mounted: Controls for the unit are to be supplied by the controls contractor and are to be mounted, calibrated, and tested in the field.

OPTIONS

Unit Accessories

1. The unit shall be built to comply with the Chicago Code. All control enclosures will include dust tight gasketing and toggle switch.
2. The unit shall be supplied with controls toggle disconnect switch. This switch will disconnect all power to the terminal unit.
3. All control enclosures shall be supplied with dust tight gasketing.
4. The unit shall be supplied with a transformer of Voltage defined on schedule.
5. The unit shall be supplied with hanger brackets to allow for a 1/2" threaded rod.

