

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 American National Standards Institute (ANSI).
  - .1 ANSI/AMCA 210-1999, Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.
  - .2 ANSI/NFPA 90A-2002, Standard for the Installation of Air Conditioning and Ventilating Systems.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .3 International Organization of Standardization (ISO).
  - .1 ISO 3741-2001, Acoustics-Determination of Sound Power Levels of Noise Sources Using Sound Pressure - Precision Methods for Reverberation Rooms.
- .4 Underwriters Laboratories (UL).
  - .1 UL 181-2003, Factory-Made Air Ducts and Air Connectors.

### **1.2 SYSTEM DESCRIPTION**

- .1 Performance Requirements:
  - .1 Catalogued or published ratings for manufactured items: Obtained from tests carried out by manufacturer or those ordered by manufacturer from certified ADC (Air Diffusion Council) testing agency signifying adherence to Codes and Standards.

### **1.3 SUBMITTALS**

- .1 Product Data:
    - .1 Submit manufacturer's printed product literature, specifications and datasheet required. Include product characteristics, performance criteria, and limitations.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance to this system.
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- .2 Test data: To ANSI/AMCA 210.
  - .1 Submit published test data on DIN (Direct Internal Noise), in accordance with ISO 3741 made by independent testing agency for 0, 2.5 and 6 m/s branch velocity or inlet velocity.
  - .2 Sound power level with minimum inlet pressure of 0.5 kPa in accordance with ISO 3741 for 2<sup>nd</sup> through 7<sup>th</sup> octave band, also made by independent testing agency.
  - .3 Pressure loss through silencer shall not exceed 60% of inlet velocity pressure maximum.
- .2 Shop Drawings:
  - .1 Submit shop drawings in accordance with Architectural Specifications.
  - .2 Indicate the following:
    - .1 Capacity;
    - .2 Pressure drop;
    - .3 Noise rating;
    - .4 Leakage.
- .3 Quality Assurance Submittals: Submit following in accordance with Architectural Specifications.
  - .1 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .2 Instructions: Submit manufacturer's installation instructions.
- .4 Closeout Submittals:
  - .1 Provide maintenance data for incorporation into the "Operating and Maintenance Manual".

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- .1 Packing, Shipping, Handling, and Unloading:
    - .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
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## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURED UNITS**

- .1 Terminal units of the same type to be product of one manufacturer.

### **2.2 VARIABLE VOLUME BOXES**

- .1 Pressure independent reset to air flow between zero and maximum air volume.
  - .2 Differential pressure not to exceed 25 Pa at inlet air velocity of 10 m/s.
  - .3 Sound ratings of assembly not to exceed 30 NC 1.5 m away at 250 Pa.
  - .4 Velocity sensor must be of Pitot type, in accordance with manufacturer's specifications.
  - .5 Terminal unit must CSA certified.
  - .6 Component Elements:
    - .1 Actuator and controller: See section 2.3 "commande" below.
    - .2 Pitot tube type speed sensor.
  - .7 Casing: constructed of 0.8 mm (0.031 in) thick galvanized steel, internally lined with 25 mm, 0.7 kg density fiberglass, to UL181 and ANSI/NFPA 90A. Mount control components inside protective metal shroud.
    - .1 Balancing elements mounted inside a steel casing;
    - .2 Leakage through the casing must not be greater than 3% of the calculated air flow, while the pressure upstream and downstream are 1,5 kPa and 0 kPa. The regulator keeps the air flow steady within 5% of the desired air flow.
  - .8 Damper: Galvanized steel with peripheral gasket and self lubricating bearings. Air leakage past closed damper not to exceed 2% of nominal rating at 750 Pa inlet static pressure, in accordance with Air Diffusion Council test procedure.
  - .9 Operator, controller and transformer supplied by Division 25.
  - .10 Characteristics: As indicated on drawings.
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## **2.3 CONTROLLER**

- .1 Equipment provided by the regulation section:
  - .1 Electronic controller.
  - .2 Current transformer.
  - .3 Speed pressure transmitter.
  - .4 Actuator.
- .2 Equipment provided by this section:
  - .1 Pitot tube.
  - .2 PVC pipe between the pitot tube and the velocity pressure transmitter.
- .3 Control equipment must be CSA approved.

## **PART 3 - EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

### **3.2 INSTALLATION**

- .1 Install in accordance with manufacturers recommendations.
  - .2 Support independently of ductwork.
  - .3 Install with at least 1,000 mm of flexible inlet ducting and minimum of four duct diameters of straight inlet duct, same size as inlet.
  - .4 Locate controls, dampers and access panels for easy access.
  - .5 Coordinate controls systems with balancing section.
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### **3.3 CLEANING**

- .1 Perform cleaning.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools, and equipment.

**END OF SECTION**

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