

part 1 - general

- 1.01 summary
 - A. section 15857 includes:
 1. power roof ventilators.
 - B. related sections:
 2. 15050 - basic materials and methods.
- 1.02 references
 3. air movement and control association: 30 w. university drive, arlington heights, il 60004.
 4. amca 210-74: laboratory methods of testing fans for rating.
 5. amca 300: reverberant room method for sound testing of fans.
 6. amca 301: methods for calculating fan sound ratings form laboratory testing.

- 1.03 submittals
 - C. general: in accordance with section 15050.
 - D. product data: include:
 11. dimensioned drawings for fans.
 12. fan curves.
 13. sound power data for fans.
 14. motor data.
 15. vibration isolators.
- 1.04 quality assurance
 - E. certification: of performance and sound power data in accordance with amca 210. provide amca certification and rating seal on fans.

part 2 - products

- 2.01 manufacturers
 - F. requests for substitutions: in accordance with section 15050.
- 2.02 general requirements
 - G. bearings: equip all fans with extra heavy duty, grease lubricated, anti-friction ball or spherical roller, self-aligning, pillow block bearings. select bearings for a minimum life (afbma-110) in excess of 200,000 hours operating at maximum cataloged operating conditions. extend lubrication lines to accessible locations.
 - H. fan drives: provide v-belt drives for all fans consisting of variable-pitch motor sheaves, fan sheaves and v-belts. belt service factors to be 1.4 of motor nameplate horsepower for motors 10 horsepower and less. furnish machine matched v-belt sets sealed with wire. drives to be as manufactured by browning manufacturing, woods, or Eaton.
 - I. drive guards: angle iron frame with expanded metal spot or stitch welded front, back and around the frame. openings with covers to be provided for taking rpm readings on both the fan and motor. guard to be supported on brackets from the floor or fan base, and easily demountable. include a permanent metal tag attached to each belt guard cover indicating number, style and length of replacement belts required.
 - J. surface treatment for fans and as indicated: clean of rust, mill scale, etc., and degrease all fan wheels, shafts and the interior and exterior of fan housings. apply a primer coat of zinc chromate and then spray two (2) coats of chlorinated rubber base paint to prevent corrosion. all work to be done at factory.
 - K. balancing: statically and dynamically balance all fans after surface treatment and assembly prior to shipment.
 - L. lubrication fittings: extend lubrication lines with fittings on all fans and fan motors to accessible locations.

- 2.03 power roof ventilators
 - M. fan type: low silhouette type, centrifugal, having backward-curved blades and bear amca seal. exposed parts to be aluminum.
 - N. fan drives: equip with detachable hood, discharge baffles, birdscreens, vibration eliminators, safety disconnect switch and internal wiring post and motor mounting base.
 - O. automatic control damper: each unit will have low leakage automatic control damper.
 - P. supports: prime coat steel supporting parts and internal steel framework. motors to be rail mounted out of the airstream and in separate compartment with cooling provisions.
 - Q. curb: provide pre-manufactured curb; 18 inches high.
 - R. acceptable manufacturers: cook, acme, greenheck, jenn-air, penn.

part 3 - execution

- 3.01 installation
 - AJ. protect bearings, motors, and other fan parts during installation. install fans in locations as indicated on plans.
 - AK. check belt tension to correspond to manufacturer's recommended tightness.
 - 3.02 sheave change
 - AL. upon completion of air systems, verify that fan is delivering required capacity by operating each fan system. if different than specified, determine whether the "as-built" conditions require increasing or decreasing fan rpm. install the sheave required to provide the scheduled fan delivery capacity when system is in balance.
 - 3.03 rebalance
 - AM. when fans are noisy or cause vibration to ducts, verify that fan is balanced.
 - 3.04 schedules
 - AN. capacities and requirements to be as scheduled.
- end of section

part 1 - general

- 1.01 summary
 - A. section 15930 includes:
 1. variable air volume boxes.
 - B. related sections:
 2. 15050 - basic materials and methods.
- 1.02 references
 - D. general: see section 15050.
 - E. air-conditioning and refrigeration institute, 4301 north fairfax drive, suite 425, arlington, va 22203.
 - 9. air 880
 - F. american society for testing and materials, 1916 race street, philadelphia, pa 19103.
 - 10. gstm c665.
 - G. national fire protection association, 1 batterymarch park, quincy, ma 02269-9101.
 - 11. nfpa 90a - standard for the installation of air conditioning and ventilating systems.
 - H. underwriters laboratories, inc., 333 pfingsten road, northbrook, il 60062-2096.
 - 13. ul 181.
- 1.03 definitions
 - I. general: see section 15050.
- 1.04 submittals
 - J. product data and shop drawings:
 14. procedures: in accordance with section 15050.
 15. contents:
 - a. descriptive literature: for materials and methods of construction. address specified features. note and justify exceptions.
 - b. drawings: dimensioned.
 - c. vav box performance data: air pressure drop, and sound power data at maximum scheduled air flow rates for each size unit.
 - d. vav box schedule: listing each unit size, location, tag #, cfm set points, and accessories.
 - e. reheat coil schedule: listing each coil, tag #, associated vav box tag #, air performance data.

part 2 - products

- 2.01 manufacturers
 - L. general requirements: see section 15050.
 - M. equivalent manufacturers:
 16. vav boxes: anemostat, kreuger, metal industries, price, tempmaster, titus, tuttle & bailey
- 2.02 vav box - single duct
 - N. type: single-duct, variable air volume control unit.
 - O. casing: 22-gauge galvanized steel.
 - 17. fabrication: for leak resistance using locking seams and duct sealant conforming to nfpa 90a.
 - 18. discharge connection: slip & drive type integral with casing.
 - 19. inlet collar: round or oval, sized for use with rigid duct.
 - P. casing insulation: secured to interior of casing.
 - 20. insulation material: flame-attenuated glass fibers bonded in thermosetting resin with acrylic surface treatment. Coat all exposed insulation edges with NFPA 90A approved sealant.
 - f. thickness: 1/2".
 - g. conductivity: 0.24 btu-in./(hr-ft²-t) @75f mean.
 - Q. insulated access panels: 4" by 6" minimum size located in casing bottom to permit inspection and cleaning of damper and reheat coil.
 - R. attenuation sections: integral to basic unit casing.
 - S. damper assembly: constructed of two 24 gauge galvanized steel blades sandwiched with integral blade seal and secured to steel shaft.
 - 21. bearings: self-lubricating nylon.
 - 22. shaft: marked on end to indicate blade position.
 - 23. maximum angular blade travel: 60 degrees.
 - 24. maximum leakage: at 6" w.g. differential pressure.
 - h. up to 6" inlet size: 6 cfm.
 - i. 7" and 8" inlet sizes: 7 cfm.
 - j. 9" thru 12" inlet sizes: 10 cfm.
 - k. 14" and larger inlet sizes: 15 cfm.
 - T. air velocity pressure sensor: center tapped averaging type with 12 sample points located to represent equal duct areas in unit inlet collar.
 - 25. signal amplification: 3 times.
 - 26. accuracy: 5 percent of airflow throughout catalogued operating range of unit.

- U. controls cabinet: sheetmetal enclosure with removable front
- V. damper actuator & velocity pressure transducer: furnished under this section.
- W. SCR Electric reheat coils:
 1. Proportional,modulating etl listed electric coils supplied and installed on the terminal by the terminal manufacturer. House coils in an attenuator section integral with the terminal with element grid recessed from unit discharge a minimum of 5 inches. Elements shall be 80% nickel chrome, supported by ceramic isolators a maximum of 3.5 inches apart, staggered for maximum thermal transfer, and balanced to ensure equal output per step. The integral control panel shall be housed in a NEMA 1 enclosure with hinged access door for access to all controls and safety devices.
 2. Electric coils shall contain a primary automatic reset thermal cutout, a secondary manual reset thermal cutout, proportional electric airflow sensor for proof of flow, and line terminal block. The proportional electronic airflow sensor shall be totally independent fo the duct static pressure and shall adjust the heater capacity according to the available airflow. The heaters shall deliver maximum heating when needed with normal minimum airflow, reduce heating with lower than minimum airflow and stop heating with no airflow. Unit shall include an integral door interlock type disconnect switch which will not allow the access door to be opened while power is on. Non-interlocking type disconnects are not acceptable. All individual components shall be UL listed or recogized.
 3. Heaters shall be equipped with a proportional SCR controller to modulate the heater load according to the temperature control signal. The electronic controller shall be compatible with the following input signals.

Thermostat: Provide 24 hour/7day programmable thermostat and other controllers, wiring, and accessories required to accomplish the specified sequence operation.

VAV Box Sequence Of Operation: As the space temperature decreases the electric heating is modulated to satisfy thermostat setpoint (72 degrees F adjustable). As the space temperature increases the heating is modulated off. Upon a further increase in space temperature the unit airflow modulates between minimum and maximum setpoint to satisfy thermostat setpoint (72 degrees F adjustable).

part 3 - execution


3.01 schedules

- U. see vav box schedule on drawings.

3.02 coordination.

- V. verify mounting side for controls with installing contractor before shipping units.
- W. coordinate installation and service access requirements with other trades
- X. coordinate electric power requirements with electrical contractor.

3.03 installation

- Y. unit support: individually from structure in conformance with manufacturer's recommendations.
- Z. ceiling access panels:  as specified in section 15050 for units above inaccessible ceilings.

end of section



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PROJECT :



EXECUTIVE OFFICE LAYOUT
191 RIVERSIDE
PORTLAND, MAINE

D A T E:	ISSUED FOR:
11.12.07	90% REVIEW
11.16.07	PERMIT
11.28.07	ADDENDUM #1

SHEET TITLE :
MECHANICAL SPECIFICATIONS

SHEET NO. :
M101