

VAV TERMINAL UNITS

Single duct terminals are the fundamental building blocks for a variable air volume (VAV) system. Their primary function is to regulate airflow to a zone, in response to zone temperature requirements. The GRAND VAV is unique as it incorporates many design features that increase performance, decrease installation and service cost and offers increased value, over and above this basic function.

All VAV terminals are not equal! By specifying the GRAND VAV, you are assured of accurate, AHRI equivalent performance ratings. A wide selection of unit configurations, accessories and control types provide considerable scope for problem solving and cost-effective innovation.

The VAV's compact size and easy access for service saves time and expense in installation. The VAV fits easily in cramped mechanical spaces, either in new building construction or retrofit.

The VAV's compact size and easy access for service saves time and expense in installation. The VAV fits easily in cramped mechanical spaces, either in new building construction or retrofit.

Building owners will benefit from the energy efficient low leakage design, reducing utility expenses. Control accuracy, especially at minimum flow rates, is easier to achieve with a GRAND multi-point inlet velocity sensor. Control accuracy is critical in maintaining good air quality reducing energy waste.

The VAV's standard insulation is a high density liner. The skin resists abrasion and erosion from air movement. The body maximizes thermal and acoustical performance. The GRAND single blade damper design helps reduce noise levels too, for a quieter work environment.



VAV Casing Leakage, CFM

INLET SIZE	ΔP, IN WC			
	1.0	2.0	4.0	6.0
4, 5, 6	2	3	4	5
7, 8	4	5	7	9
9, 10	4	6	8	10
12	5	7	10	12
14	6	9	13	16
16	7	10	14	17

VAV Damper Leakage, CFM

INLET SIZE	ΔP, IN WC			
	1.0	2.0	4.0	6.0
4, 5, 6	3	4	6	7
7, 8	3	4	6	7
9, 10	3	4	6	7
12	3	4	6	7
14	3	5	7	8
16	4	5	7	9

MORE REASONS TO SPECIFY AND SELECT THE GRAND VAV

GRAND innovation carries through the widest array of standard single duct terminal configurations. electric coils, are installed, wired and functionally tested as an integral unit before shipment for quicker, trouble-free job-site installation. Multiple outlets with standard locking balancing dampers and integral attenuators are also available.

Grand continues to offer the most innovative and popular lining alternatives for special applications including Fibre-Free; the industry benchmark Steri-Loc; and the premium double wall liner, UltraLoc which is the only natural fiber insulation on the market.

Steri-Loc provides a smooth, nonporous skin to guard against mold and bacteria growth. Erosion is eliminated, as there is no glass fiber exposure to the airstream. It has reinforced surfaces that can be wiped down. Steri-Loc adds the feature of a very high density, rigid insulation and special "Z-Strip" construction for an extremely rigid terminal. Sound levels are generally superior to dual wall construction, while offering virtually identical levels of protection.

GRAND - experts in DDC zone control with a detailed understanding developed through years of selling and supporting the powerful VMA digital controller, Grand has industry leading experience in the application of Direct Digital Control (DDC) to terminals. This same expertise is made available when your project requires quality engineering, coordination and manufacturing for factory mounting when controls are supplied by others.

VAV TERMINAL UNITS

FEATURES

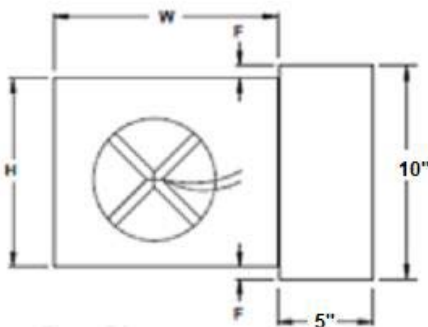
- Standard fiberglass insulation with woven glass fiber fabric facing.
- Neoprene peripheral gasket to prevent leakage.
- Multi-point averaging inlet differential pressure sensor.
- Round inlet with beading for good inlet connection.
- Shaft indicator indicating damper position.
- Protective metal shroud for control components mounting.
- Low pressure drop construction with round inlet and rectangular outlet- static regain.
- Can be used for Constant Air Volume (CAV) application.
- Rectangular discharge opening with slip and drive cleat duct connection.
- Optional Reheat coil available upon request.

MATERIALS

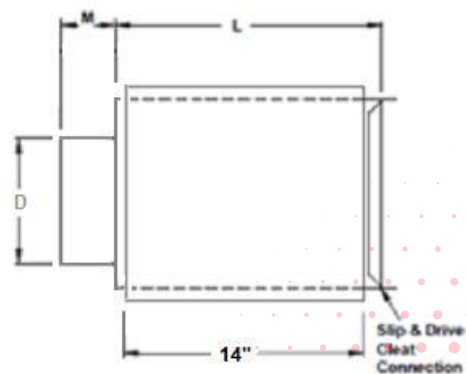
- Casing: galvanized steel 0.7mm thickness up to 8" dia. inlet & 0.9mm for higher size.
- Damper blade: 0.7mm thickness galvanized steel with a neoprene rubber peripheral gasket.
- Internal insulation: 25mm (1") 24 kg/m³ (1.5 lb/ft³) density fiber glass with cloth facing.
- Shaft Bush: High accuracy fabricated brass.
- Differential pressure sensor.

AIR VOLUME CONTROL TYPE

- Variable Air Volume (VAV) Pressure Dependent Control
 - Without differential pressure sensor.
 - Pressure dependent.
 - No monitoring of air volume.
- Variable Air Volume (VAV) Pressure Independent Control
 - With differential pressure sensor.
 - Pressure independent
 - Air volume varies depending on design flow and signal by controller.
 - Air volume could be monitored.
- Constant Air Volume (CAV) Pressure Independent Control.
 - With differential pressure sensor.
 - Pressure independent.
 - Air volume is constant (design flow) provided that the minimum static pressure is achieved.
 - Air volume could be monitored.



Section Front View



Section Side View

VAV TERMINAL UNITS

FEATURES

- Standard fiberglass insulation with woven glass fiber fabric facing.
- Neoprene peripheral gasket to prevent leakage.
- Multi-point averaging inlet differential pressure sensor.
- Round inlet with beading for good inlet connection.
- Shaft indicator indicating damper position.
- Protective metal shroud for control components mounting.
- Low pressure drop construction with round inlet and rectangular outlet- static regain.
- Can be used for Constant Air Volume (CAV) application.
- Rectangular discharge opening with slip and drive cleat duct connection.
- Optional Reheat coil available upon request.

MATERIALS

- Casing: galvanized steel 0.7mm thickness up to 8" dia. inlet & 0.9mm for higher size.
- Damper blade: 0.7mm thickness galvanized steel with a neoprene rubber peripheral gasket.
- Internal insulation: 25mm (1") 24 kg/m³ (1.5 lb/ft³) density fiber glass with cloth facing.
- Shaft Bush: High accuracy fabricated brass.
- Differential pressure sensor.

AIR VOLUME CONTROL TYPE

- Variable Air Volume (VAV) Pressure Dependent Control
 - Without differential pressure sensor.
 - Pressure dependent.
 - No monitoring of air volume.
- Variable Air Volume (VAV) Pressure Independent Control
 - With differential pressure sensor.
 - Pressure independent
 - Air volume varies depending on design flow and signal by controller.
 - Air volume could be monitored.
- Constant Air Volume (CAV) Pressure Independent Control.
 - With differential pressure sensor.
 - Pressure independent.
 - Air volume is constant (design flow) provided that the minimum static pressure is achieved.
 - Air volume could be monitored.

PHYSICAL DIMENSION UNIT: INCH

INLET SIZE	CFM RANGE	D	F	G	H	L	M	W
4	0-225	3 ³ / ₈	15/16	7 ³ / ₈	8	15 ¹ / ₂	5 ³ / ₈	12
5	0-350	4 ⁷ / ₈	15/16	7 ³ / ₈	8	15 ¹ / ₂	5 ³ / ₈	12
6	0-500	5 ⁷ / ₈	15/16	7 ³ / ₈	8	15 ¹ / ₂	3 ³ / ₈	12
7	0-650	6 ⁷ / ₈	-	7 ³ / ₈	10	15 ¹ / ₂	3 ³ / ₈	12
8	0-900	7 ⁷ / ₈	-	7 ³ / ₈	10	15 ¹ / ₂	3 ³ / ₈	12
9	0-1050	8 ⁷ / ₈	-	5 ³ / ₈	12 ¹ / ₂	15 ¹ / ₂	3 ³ / ₈	14
10	0-1400	9 ⁷ / ₈	-	5 ³ / ₈	12 ¹ / ₂	15 ¹ / ₂	3 ³ / ₈	14
12	0-2000	11 ⁷ / ₈	-	5 ³ / ₈	15	15 ¹ / ₂	3 ³ / ₈	16
14	0-3000	13 ⁷ / ₈	-	3 ³ / ₈	17 ¹ / ₂	15 ¹ / ₂	3 ³ / ₈	20
16	0-4000	15 ⁷ / ₈	-	3 ³ / ₈	18	15 ¹ / ₂	3 ³ / ₈	24
24 x 16	0-8000	23 ⁷ / ₈ - 15 ⁷ / ₈	-	5 ³ / ₈	18	15	3 ³ / ₈	38

VAV TERMINAL UNITS

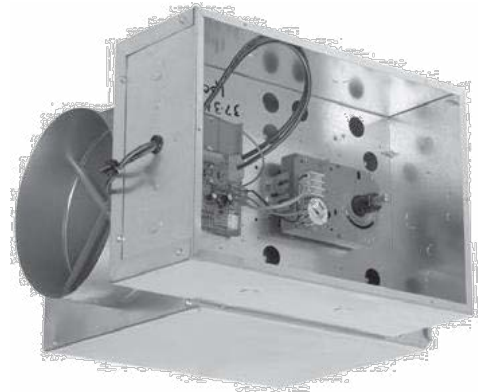
GENERAL NOTES

- Internal insulation 25mm (1") 24 kg/m³ (1,5 lb/ft³) density with woven glass fiber fabric facing to prevent air erosion.
- Galvanized steel housing.
- Mechanically seal-leak resistant construction.
- Rectangular discharge opening has drive and slip cleat duct connections as standard.
- Right hand control location standard, as shown above.
- Turbulent flow approaching the terminal will create additional noise, pressure drop and greater air flow variation. It is therefore recommended for optimum performance there should be a minimum of 4 duct diameters of straight inlet duct, same size as inlet, between the inlet and any transition, take off or fitting.

QUICK SELECTION PROCEDURE

- Select unit inlet size based upon acoustic parameters and/or maximum pressure drop requirements.
- Check inlet size selection against cfm control limits based on control type shown on this page
- Select accessories (multi-outlets, attenuators) as required
- Select reheat coil, if required. Make your selection using the actual heating flow rate, not cooling.

INLET SIZE	CFM RANGE	CFM RANGES OF MINIMUM AND MAXIMUM SETTINGS	
		MINIMUM	MAXIMUM
4	0 - 225	30	225
5	0 - 350	40	350
6	0 - 500	45	500
7	0 - 650	70	650
8	0 - 900	90	900
9	0 - 1050	120	1050
10	0 - 1400	145	1400
12	0 - 2000	190	2000
14	0 - 3000	300	3000
16	0 - 4000	385	4000
24 x 16	0 - 8000	720	8000



*Factory cfm settings (except zero) will not be made below this range because control accuracy is reduced. On pressure dependent units, minimum cfm is always zero and there is no maximum.

Note: On controls mounted by GRAND but supplied by others (FMA or Factory Mounting Authorization), these values are guidelines only. Controls mounted on an FMA basis are calibrated in the field.

VAV TERMINAL UNITS

SUGGESTED SPECIFICATIONS

GVAV BASIC UNIT ELECTRIC REHEAT COILS

- Furnish and install GRAND single duct, variable air volume terminals of the sizes and capacities shown in the plans.
- The terminal casing shall be minimum 22-gauge galvanized steel, internally lined with 1-inch insulation which complies with UL 181 and NFPA 90A. All exposed insulation edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream. The discharge connection shall be slip and drive construction for attachment to metal ductwork. The casing shall be constructed to hold leakage to the maximum values shown in the Casing Leakage table.
- The damper shall be heavy gauge steel with shaft rotating in precision brass bush. Nylon bushing are not acceptable. Shaft shall be clearly marked on the end to indicate damper position. Stickers or other removable markings are not acceptable. The damper shall incorporate a mechanical stop to prevent over-stroking and a synthetic seal to limit close-off leakage to the maximum values shown in the Damper Leakage table.
- Actuators shall be capable of supplying at least 35-inch lbs. of torque to the damper shaft and shall be mounted externally for service access. Terminals with internal actuator mounting or linkage connection must include gasketed access panel, removable without disturbing ductwork. Casing with access panel shall be constructed to hold leakage to the maximum values shown in the Casing Leakage table.
- At an inlet velocity of 2000 fpm, the minimum static pressure required to operate any terminal size shall not exceed 0.13-inch wg for the basic terminal.
- Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure.

ELECTRIC REHEAT COILS

(Available on pressure independent terminals only)

- Electric coils shall be supplied and installed on the terminal by the terminal manufacturer. Coils shall be housed in an attenuator section integral with the terminal with element grid recessed from unit discharge a minimum of 5 inches to prevent damage to elements during shipping and installation. Elements shall be of high Grade 25% chromium alloy resistance wire, supported by ceramic isolators a maximum of 3.5 inches apart, staggered for maximum thermal transfer and element life 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.
- Electric coils shall contain a primary automatic reset thermal cutout, a secondary manual reset thermal cutout, differential pressure airflow switch for proof of flow, and line terminal block. Unit shall include an optional integral door interlock type disconnect switch that 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 recognized.
- (Optional) Electric coils shall include line fusing, mercury contactors mounted and wired within the control enclosure.