



ASTIC INSULATION MATERIALS INDUSTRIES

Defining Air Solutions.....

**ALFA VAV UNITS
BYPASS AND PRESSURE INDEPENDENT TYPE**





ALFA VARIABLE AIR VOLUME CONTROL UNITS BYPASS TYPE



"ALFA variable Air Volume (VAV) Control Units are duct mounted pressure dependent bypass type unit, ideal for low and medium pressure application. These units are suitable for both cooling and heating systems. The temperature can be preset on the electronic analogue/digital thermostat, which senses the room temperature and controls the VAV unit. The required quantity of air to each zone is pumped in to the area based on load requirement and the balance air by passed through the bypass section of the VAV unit above false ceiling or to return air ducts.

Features of ALFA Bypass VAV Control Unit

- ▶ Easy to install
- ▶ Powder Coated ALFA VAVs can easily be located to suit interior requirements
- ▶ Our Design ensures low pressure drops on air side
- ▶ Special acoustic treatment helps to achieve low noise control level
- ▶ ALFA VAVs operates with digital thermostat to ensures precise temperature control
- ▶ ALFA VAVs available with ON/OFF controls – optional
- ▶ ALFA VAVs suitable for both heating and cooling control system
- ▶ ALFA VAV with sound attenuators - Optional
- ▶ ALFA VAVs have bypass balancing dampers & properly designed integral outlets which can be suitable for Pre-insulated, GI, SS & Aluminium air conditioning duct system

ALFA VAV Series

- ▶ Bypass type
- ▶ Low NC levels
- ▶ Low air side pressure drops
- ▶ Galvanized steel construction
- ▶ Stainless steel construction - optional
- ▶ Aluminium construction - optional



2 Way VAV with
Modulating Actuator



Stainless Steel Construction

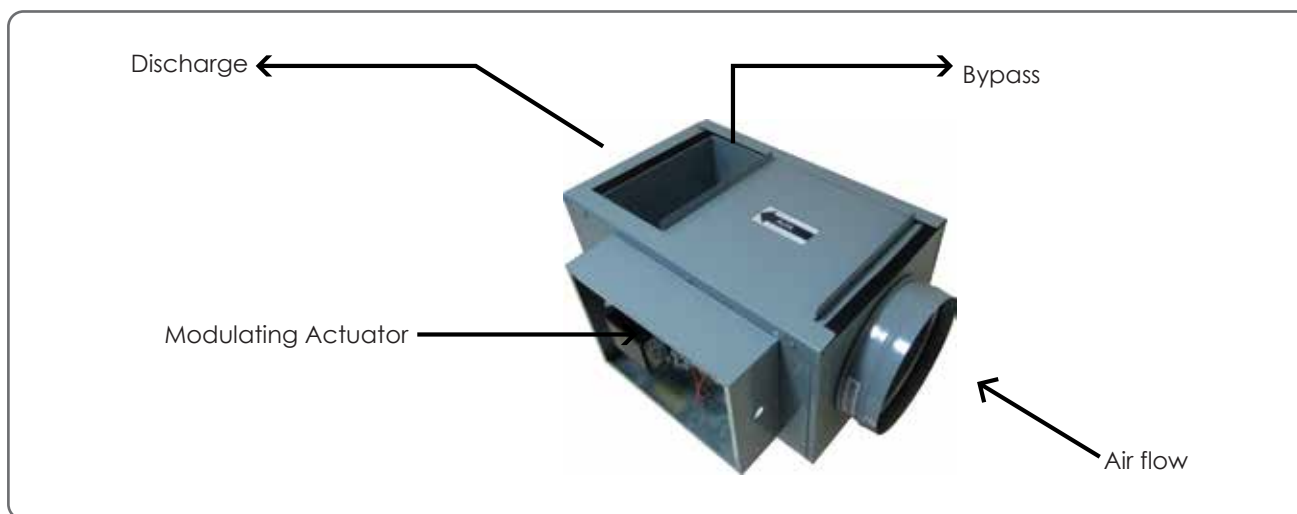
Technical Features

- ▶ 20BWG galvanized steel sturdy design & Damper blade with 18 BWG with rubber gasket to eliminate the noise, ALFA VAVs are with round/rectangular inlet as per standards, Outlets are rectangular with Slip & Drive connection
- ▶ Powder coating suits interior requirements & prevent corrosion
- ▶ ALFA VAV casing with acoustically & thermally lined internal insulation/ linear of 25 mm thick & 32 Kg/m³ density, loose edges are sealed and covered with Z strip stiffeners to prevent air erosion
- ▶ ALFA VAVs are sealed and gasket mechanically for air tight construction
- ▶ Size ranging from 100 CFM to 3000 CFM.



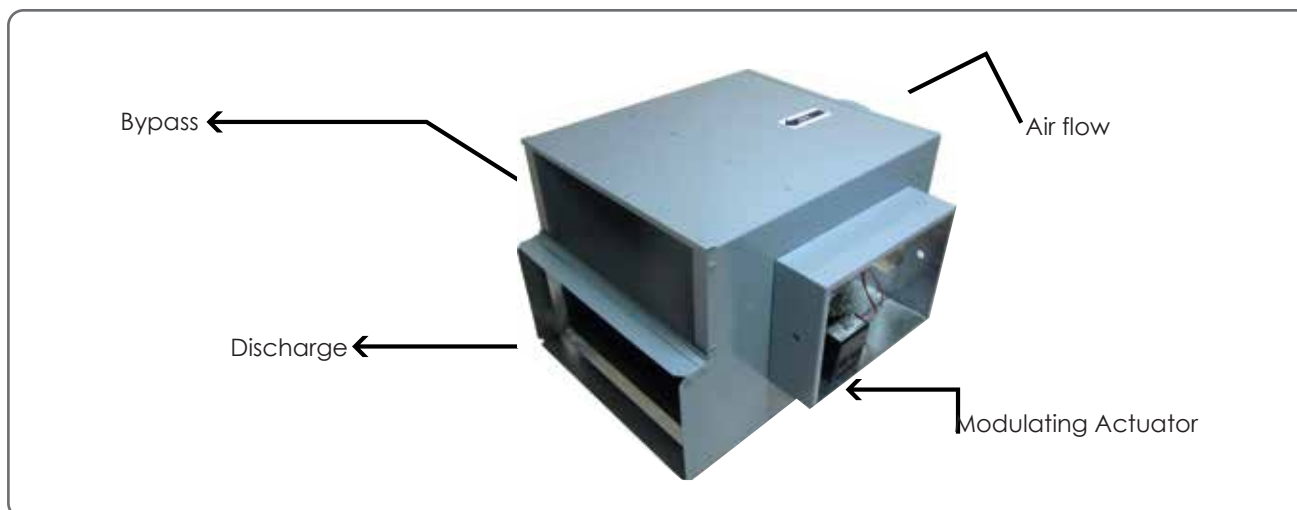
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Dimensional Data ALFA VAV-01 to 05



MODEL NO.	CFM	INLET	DISCHARGE	LENGTH	BYPASS OPENING	
		A	B		D	E
ALFA VAV-1	80 TO 200	Ø 125	250 X 200	400	180	105
ALFA VAV-2	160 TO 400	Ø 200	300 X 250	400	230	150
ALFA VAV-3	240 TO 600	Ø 250	350 X 300	550	280	250
ALFA VAV-4	320 TO 800	Ø 300	400 X 350	550	330	250
ALFA VAV-5	480 TO 1200	Ø 350	450 X 400	600	380	260

Dimensional Data ALFA VAV-06 to 08



MODEL NO.	CFM	INLET	DISCHARGE	LENGTH	BYPASS OPENING	
		A	B		D	E
ALFA VAV-6	840 TO 1500	Ø 400	500 X 250	610	435	180
ALFA VAV-7	960 TO 2400	400 X 500	600 X 250	610	535	180
ALFA VAV-8	1280 TO 3000	400 X 600	800 X 250	610	740	175



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Selection Data

MODEL NO.	CFM	Δ Ps	SOUND POWER DB							DISC.	RADIATED
			OCTAVE BAND			MAX.					
			(2).	(3).	(4).	(5).	(6).	(7).			
			125	250	500	1000	2000	4000	NC		
BVAV-01	75	0.07	40	31	24	17	15	15	-	10	
	120	0.14	47	41	34	28	24	23	12	12	
	160	0.24	51	49	42	36	30	26	14	14	
	200	0.35	55	54	48	42	35	28	19	20	
BVAV-02	160	0.05	44	30	22	19	17	20	-	-	
	240	0.12	49	41	33	29	25	25	12	13	
	320	0.21	52	48	41	36	31	28	13	19	
	400	0.33	54	53	47	42	36	31	15	25	
BVAV-03	240	0.04	42	31	22	20	18	21	-	-	
	360	0.09	56	39	32	28	25	24	-	11	
	480	0.16	50	45	40	34	30	27	12	14	
	600	0.25	52	49	46	39	34	29	13	22	
BVAV-04	320	0.03	41	28	19	18	18	21	-	-	
	480	0.07	46	38	30	26	24	23	-	12	
	640	0.12	49	45	37	31	28	25	11	15	
	800	0.2	52	50	43	35	31	27	13	22	
BVAV-05	480	0.03	42	30	21	21	20	21	-	-	
	720	0.06	47	39	31	29	26	24	-	12	
	960	0.11	50	46	39	34	30	26	12	16	
	1200	0.17	53	51	44	38	33	28	13	21	
BVAV-06	840	0.03	42	30	22	19	19	18	-	-	
	960	0.06	48	40	33	28	25	22	-	13	
	1280	0.12	52	47	40	35	30	25	11	16	
	1500	0.18	55	53	46	40	34	28	13	23	
BVAV-07	960	0.04	41	32	27	18	15	16	-	11	
	1440	0.10	49	42	38	31	27	26	-	15	
	1920	0.18	54	50	46	39	35	33	12	23	
	2400	0.29	58	56	52	46	41	38	14	30	
BVAV-08	1280	0.04	44	37	33	27	23	22	-	11	
	1920	0.09	51	47	42	36	32	29	11	15	
	2560	0.15	57	54	48	43	39	34	12	23	
	3000	0.23	61	59	53	48	44	37	14	31	

Notes

- ▶ Δ Ps static pressure difference from inlet to discharge.
- ▶ Dash (---) indicates sound power dB or NC level less than 10.
- ▶ Δ Ps is the minimum pressure drop required to deliver CFM shown with the primary damper in wide open position (Bypass Closed).

Discharge NC Levels are Based on

- ▶ 1.5 mtr rectangular 300x300 duct lined with 25mm thick fibreglass insulation.
- ▶ Rectangular tee attenuation entering branch duct.
- ▶ 1.8mtr lined flex duct (200mm diameter).
- ▶ Maximum of 300 CFM per outlet .
- ▶ Space effect factor (141 m³) at 1.5 mtr from outlet.
- ▶ End reflection.
- ▶ Environmental adjustment factor.



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PRESSURE INDEPENDENT TYPE VAV



"Alfa Pressure independent VAV units are an innovative solution manufactured with the greatest precision and latest manufacturing techniques at Astic Industries. Alfa pressure independent terminal units are designed to control air volume flow rate for supply air on variable volume system. These units are designed to supply the air flow rate of conditioned air into an occupied zone in response to control signal from a thermostat or building management system. The components of the unit include an acoustically lined sheet metal box round inlet damper, sensor and rectangular outlet. Alfa PI VAV are connected with Nepcross cross flow differential sensor (Naptronic Make Canada) for measuring the air volume, which is located in the upstream section of the VAV chamber .The sensing points collectively average the primary air velocity pressure across the entire inlet area. These terminal units also incorporate control components, (VAV actuator, transformer), which are factory fitted and inhouse calibrated to ensure meet all design criteria . This enable the terminal to monitor desired air flow rate as indicated by the thermostat or input signal of 0-10V and compensate instantly for any changes in supply air pressure that might tend to alter the supply air volume - resulted as pressure independent variable air volume system.

Features And Benefits

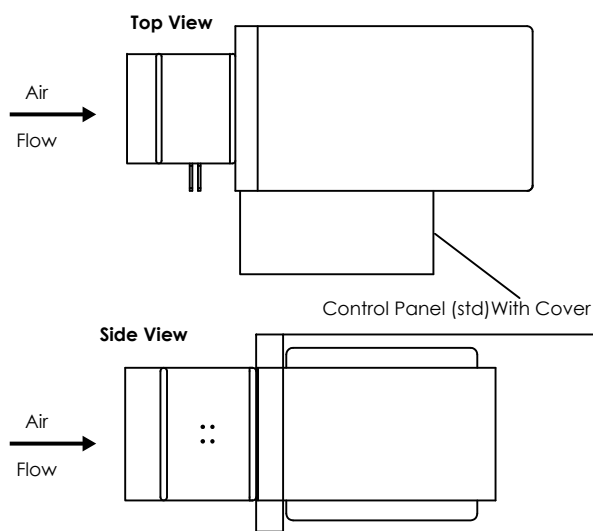
- ▶ Galvanized steel casing,mechanically sealed for low leakage construction.
- ▶ Circular damper blades for better flow management
- ▶ Full range of opinion and accessories available (heating coils, attenuators...etc)
- ▶ Available with imported Nertronic,Canada make of Nepcross Cross flow sensor,controller,Actuator and Thermostat CO₂ sensor
- ▶ Nepcross Cross flow sensors amplify sufficiently for differential pressure signals and minimize the white noise associated with the signal amplification.
- ▶ Dampers rotate in a low friction and long life Brass bearings.
- ▶ Control componets encased in control panels
- ▶ Acoustic lining with glass fibre wood suitable for air velocity up to 20 m/s
- ▶ Flexible silicone gasket on damper blades for low leakage
- ▶ Shaft indicator for damper position

Construction Details of Pressure Independent VAV

- ▶ Air terminal casing ,inlets are manufactured from 22 G galvanized steel conforming to ASTM A 653,LFQ and G 90 coating
- ▶ Damper shall have internal acoustic lining of 25 mm thick and 48 Kg/m³ density
- ▶ Damper blades shall be manufactured from 0.9mm galvanized sheets with flexible gasket to ensure low leakage.
- ▶ Damper bearing –brass bush 12mm
- ▶ Aluminum flow grid – Nepcross sensor (Neptronic Make Canada)
- ▶ Supplied with imported Neptonic, Canada make controller ,Actuator and Thermostat
- ▶ Grooved inlet connection tube for added rigidity and secure flex duct connections
- ▶ Rectangular discharge with slip and drive cleat duct connection

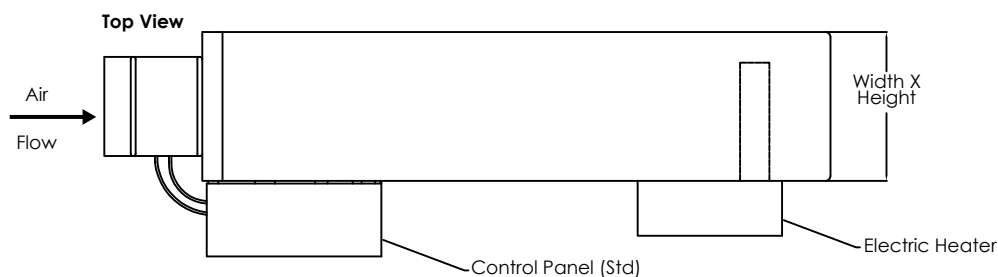


Single Duct Air Terminal Unit, Cooling Only



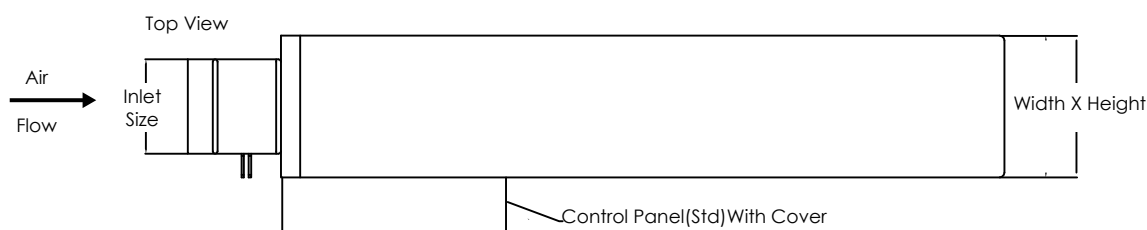
Model Number	Inlet Size	Width	Height	Length
	in	mm	mm	mm
ALFA PI - VAV - 6	6	305	203	420
ALFA PI - VAV - 8	8	305	254	420
ALFA PI - VAV - 10	10	356	318	420
ALFA PI - VAV - 12	12	406	381	480
ALFA PI - VAV - 14	14	508	445	500
ALFA PI - VAV - 16	16	608	451	550

Single Duct Air Terminal Unit With Electric Heat



Model Number	Inlet Size	Width	Height	Length
	in	mm	mm	mm
ALFA PI - VAV - EH - 6	6	305	203	890
ALFA PI - VAV - EH - 8	8	305	254	890
ALFA PI - VAV - EH - 10	10	356	318	890
ALFA PI - VAV - EH - 12	12	406	381	890
ALFA PI - VAV - EH - 14	14	508	445	890
ALFA PI - VAV - EH - 16	16	608	451	890

Single Duct Air Terminal Unit With Integral Attenuator



Model Number	Inlet Size	Width	Height	Length
	in	mm	mm	mm
ALFA PI - VAV - SA - 6	6	305	203	915
ALFA PI - VAV - SA - 8	8	305	254	915
ALFA PI - VAV - SA - 10	10	356	318	915
ALFA PI - VAV - SA - 12	12	406	381	915
ALFA PI - VAV - SA - 14	14	508	445	915
ALFA PI - VAV - SA - 16	16	608	451	915



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Radiated And Discharge Sound Power, $\Delta P_s=1.5$ in.wg

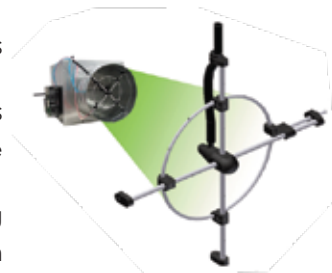
MODEL NO.	Min Ps	CFM	Sound (db)	125 Hz	250 Hz	500 Hz	1K Hz	2K Hz	4K Hz
ALFA PI-VAV-6	0.08	400	RADIATED	60	53	49	44	41	36
			DISCHARGE	69	64	60	53	49	49
ALFA PI-VAV-8	0.01	700	RADIATED	64	57	52	44	39	34
			DISCHARGE	77	71	62	58	55	53
ALFA PI-VAV-10	0.02	1100	RADIATED	60	58	52	44	38	32
			DISCHARGE	75	70	65	60	56	53
ALFA PI-VAV-12	0.01	1600	RADIATED	63	56	54	45	41	40
			DISCHARGE	70	67	62	60	59	57
ALFA PI-VAV-14	0.01	2100	RADIATED	64	57	55	45	40	34
			DISCHARGE	68	62	61	63	63	60
ALFA PI-VAV-16	0.03	2800	RADIATED	66	62	56	50	47	44
			DISCHARGE	76	69	66	64	64	60

“Nepcross” Cross Flow Sensor

Nepcross has been developed in order to give Independent Box Manufactures the ability to participate in the lucrative VAV pressure independent market.

Now, the independent box manufactures have the choice to use the Nepcross with different VAV controllers or use the Nepcross with Neptronic Pressure Independent controllers.

The Neptronic Pressure Independent Controllers (and corresponding thermostats) are available in free standing mode EVC or BAC net configuration mode EVCB.



Nepcross Design Achieves Two Major Objectives

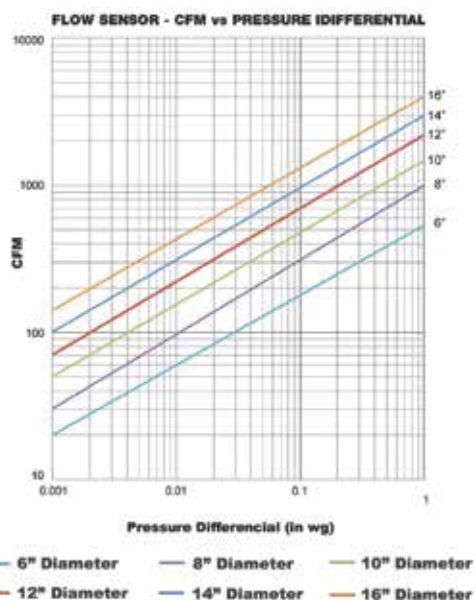
1. Amplify sufficiently for the differential pressure signal.
2. Minimize the white noise associated with the signal amplification.

This has been accomplished by Nepcross's unique circular static pressure amplification probe and the geometry of the total pressure radial probes.

The static pressure amplification circular probe collects the pressure signal from strategically located pressure ports along its outer diameter

The average static pressure signal (ASSP) is sent to the Low port of the electronic transducer. The ASAP is responsible for the amplification of the resulting Velocity Pressure Signal.

The Neptronic VAV controllers have tailored curves also in the lower velocities which are more representative of the actual velocities rather than based on one point calibration and theoretical assumptions. That feature makes the total Neptronic assembly a perfect solution for modern VAV application



VAV Single Duct Controller & Actuator

The VAV package consists of 2 parts, namely the thermostat and the EVC which is a combination of an actuator and a controller which mounts directly to the damper jackshaft on the side of the VAV box.

The EVC is available in two versions: a BTL listed BAC net application specific version (EVCB) or a stand-alone version (EVC).





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Inner Diameter (Inch)	6"	8"	10"	12"	14"	16"
Area	0.196 ft ²	0.349 ft ²	0.545 ft ²	0.785 ft ²	1.069 ft ²	1.396 ft ²
Velocity Constant	2812 FPM	2740 FPM	2841 FPM	2822 FPM	2666 FPM	2837 FPM
Velocity Pressure Constant	0.49	0.47	0.50	0.49	0.45	0.50
K Factor	552 CFM	956 CFM	1550 CFM	2216 CFM	2850 CFM	3961 CFM
Amplification Factor F	2.60	2.30	2.30	2.15	2.15	2.10
Total Pressure Ports (ASHARE Standard 62)	12	12	16	16	20	20
Velocity Range	300 TO 3000 FPM (1.5 TO 1.52 m/s)					
Temperature Range	-40° C to 80° C (-40° F to 176° F)					
Materials	Nepcross: Aluminium & PC/ABS Collar 22 gauge galvanized steel					

Installation



Factory

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