WB Air

air distribution products

form function reliability

VAV BOXES

MODEL : WB-VAV-S-0

Single Duct Terminal Unit - Bare

Model : WB-VAV-S-0

WB Air
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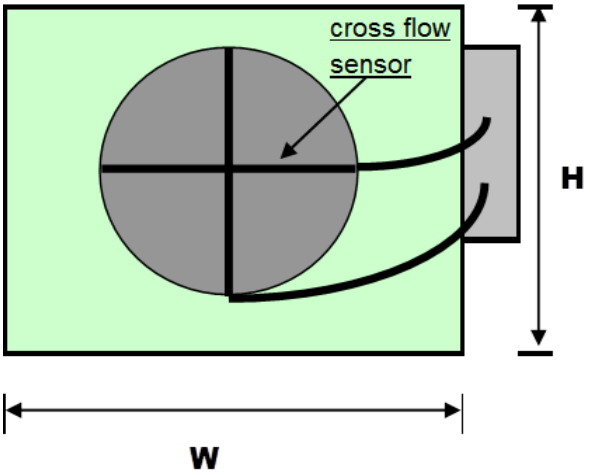
Introduction

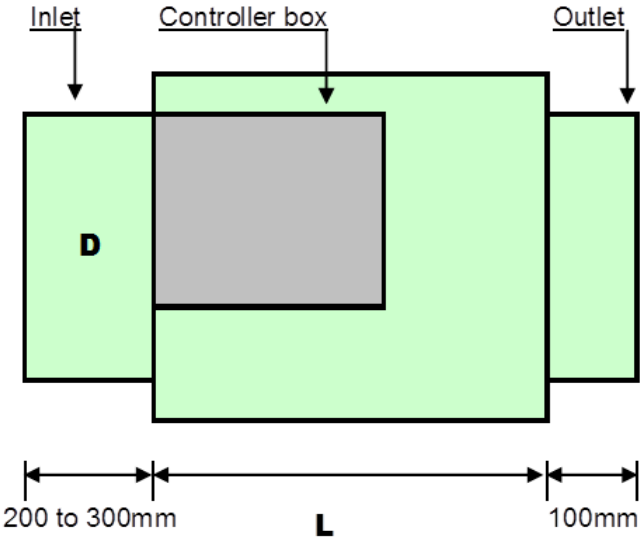
The WB VAV terminal unit is a compact unit which regulates the flow of conditioned air to a particular zone. Units may be pressure dependent or independent. Generally, pressure independent type is preferred due to the variations in duct static pressures. The accurate control of air volume by the pressure independent VAV units can result in substantial energy savings as well as increased human comfort.
For pressure independent units, please refer to our catalog for model : WB-VAV-S-E

The Model : WB-VAV-S-0 is a bare box consisting of rigid galvanised steel casing and damper blade with edge seals. Damper spindles run in bushings. Glasswool insulation of various thickness and density are available(for added prevention to possible health hazards from glasswool,elastomeric form may be specified as an option). Custom made dimensions can be produced but performance will differ.

Dimensional Detail



Inlet View



Side View

Dia	D(inlet)	W	H	L	CMH Range	Box m3	Outlet Size	
100	95	225	225	300	86 - 263	0.015	175 X 175	Dia 150
150	145	250	250	300	144 - 724	0.019	200 X 200	Dia 200
200	195	300	300	375	338 - 1130	0.034	250 X 250	Dia 250
250	245	350	350	375	529 - 1768	0.046	300 X 300	Dia 300
300	295	400	400	400	842 - 2804	0.064	350 X 350	Dia 350
350	345	450	450	500	736 - 4031	0.101	400 X 400	Dia 400
400	395	500	500	500	1357 - 4525	0.125	450 X 450	Dia 450
500	495	600	600	600	2120 - 7067	0.216	550 X 550	Dia 550

metric

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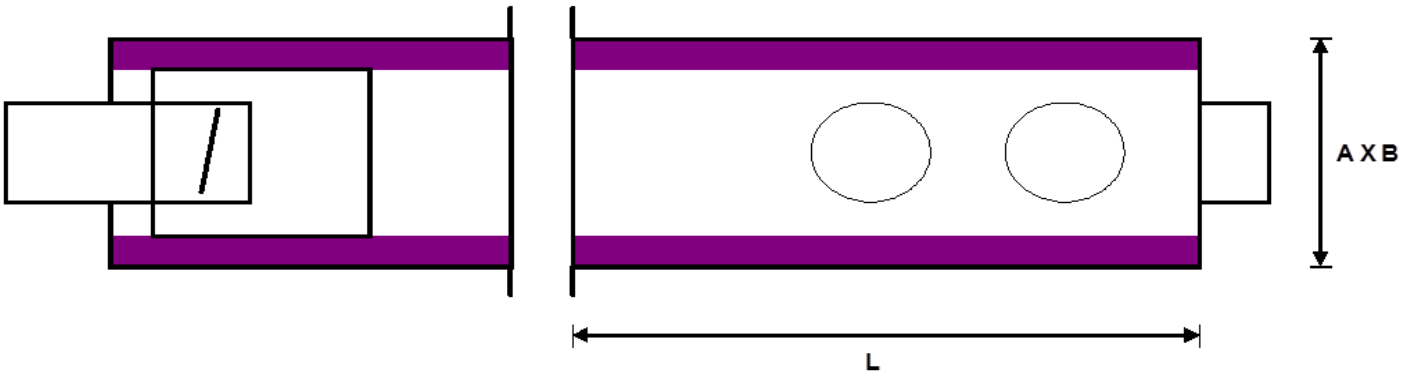
Air Distribution Products
Form Function Reliability

Accessories

MOA - Multi Outlet Adaptor



Base Unit **Multi-Outlet Adaptor Unit**

									Typical CMH range for outlet			
Dia	DInlet	A	B	L	CMH Range	Box m3	Maximum no of outlet		Dia	max	Avg	min
100	95	330	225	400	86 – 263	0.030	2 x dia 100	2 x dia 150	100	140	113	86
150	145	330	250	600	144 – 724	0.050	4 x dia 150	2 x dia 200	150	200	150	100
200	195	330	300	800	338 – 1130	0.079	5 x dia 150	3 x dia 200	200	400	300	200
250	245	380	350	1000	529 – 1768	0.133	5 x dia 200	3 x dia 250	250	600	500	400
300	295	430	400	1200	842 – 2804	0.206	5 x dia 250	3 x dia 300	300	850	725	600
350	345	530	450	1400	736 – 4031	0.334	5 x dia 300	3 x dia 350	350	1100	975	850
400	395	580	500	1600	1357 – 4525	0.464	5 x dia 300	4 x dia 350	400	1500	1300	1100
500	495	680	600	2000	2120 – 7067	0.816	5 x dia 300	5 x dia 350	450	1900	1700	1500

Notes For MOA Unit

Only one outlet size to be specified per MOA , no mixing of outlet sizes on the same unit.
All round outlets c/w single blade damper manually controlled.
Turbulent flow approaching the terminal will create additional noise and pressure. Hence all WB-MOA are designed to have length of a minimum of 4 duct diameters of the inlet duct to achieve optimum performance.

Single Duct Terminal Unit - Bare

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WB AIR VAV BOX UNIT SPECIFICATION

Type	:	Rectangular
Model	:	WB-VAV-S-0
Manufacturer	:	Wong Bros Pte Ltd
Country Of Origin	:	Australia / Singapore
Casing Material	:	Galvanised Iron
Thickness	:	22 gauge
Thermal Acoustic Insulation	:	Fiber Glass wool c/w Black Glass Tissue (Elastomeric foam may be used as an alternative)
Thickness	:	1" (25mm) for Fiber glass wool
Density (kg/m3)	:	32 kg/cu. metre for glass wool
Compliance	:	UL181 for Erosion NEPA90A for Fire Resistivity B.S. 476 Part 6 & 7
Sound Power Level	:	Testing ISO Standard 3741 & 5135
Test Set Up for Radiated & Discharged Sound Power Determination	:	ANSI/ASHRAE 130-1996 (Method of Testing for Rating Ducted Air Terminal Units)
Test Set Up for Casing Leakage & Closed Blade Leakage Determination	:	ISO 7244 (Air Distribution & Air Diffusion Aerodynamic Testing of Dampers & Valves)
Acoustics	:	AS 1217.2 1985 (Acoustic - Determination of Sound Power Levels of Noise Sources Part 2 - Precision Methods for Broad Band Sources in Reverberation Rooms)

Standard unit casing comes with damper, cross flow sensor and tubing, terminal strips and sheet metal enclosure for DDC controller and actuator. Unit casing design for a maximum inlet velocity of 1,600 feet per minute and maximum inlet static pressure of 750 Pa.

The maximum recommended static pressure over the control is 750 Pa. The set value of the minimum air volume flow rate set at the factory is selected 30-100% of the maximum volume flow rate value.

Single Duct Terminal Unit - Bare

Model : WB-VAV-S-0

Discharge Power Levels - Air Borne Sound Level

			PRESSURE DROP :								100	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	36	44	39	35	28	18	18	16	28	23
	140	39	38	49	45	40	31	20	20	17	33	28
	198	55	40	53	49	43	34	21	21	18	37	32
	263	73	41	57	52	46	36	22	22	19	40	35
150	144	40	37	45	41	37	31	22	21	16	30	25
	364	101	43	53	49	44	35	26	25	19	37	33
	508	141	45	56	53	47	36	27	26	21	40	36
	724	201	47	60	56	50	37	28	28	22	43	39
200	338	94	42	48	46	41	35	33	27	20	35	29
	565	157	45	54	51	46	37	34	29	23	39	34
	792	220	48	57	55	49	39	36	31	25	42	38
	1130	314	50	61	58	52	40	37	32	27	45	42
250	529	147	43	51	46	41	37	38	31	22	37	33
	882	245	47	55	51	46	39	39	33	26	40	34
	1238	344	50	59	54	48	41	40	35	28	43	37
	1768	491	53	62	57	51	43	41	36	30	45	41
300	842	234	43	48	47	41	33	36	29	21	36	31
	1404	390	48	53	52	45	38	37	31	24	40	35
	1966	546	51	57	56	48	41	38	32	25	43	39
	2804	779	55	61	59	51	44	38	33	27	46	43
350	736	204	45	50	47	38	37	40	35	25	37	35
	1944	540	54	58	55	46	41	44	40	33	43	39
	2952	820	58	62	58	49	42	46	43	36	46	41
	4031	1120	61	65	60	52	44	48	45	39	48	44
400	1357	377	49	54	50	42	42	45	39	33	42	39
	2261	628	55	59	53	45	44	47	42	36	44	42
	3168	880	59	62	55	47	45	49	44	38	46	43
	4525	1257	64	65	57	49	46	50	47	40	48	45
500	2120	589	52	53	49	43	46	48	42	32	44	42
	3535	982	58	58	53	47	48	50	45	37	47	45
	4946	1374	61	62	57	50	49	51	48	41	49	46
	7067	1963	65	65	60	52	50	53	50	44	51	48

			PRESSURE DROP :								250	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	39	45	42	38	31	27	31	27	32	28
	140	39	41	51	48	43	34	29	32	28	36	31
	198	55	42	54	52	46	37	30	33	29	40	35
	263	73	44	58	55	49	39	31	34	30	42	39
150	144	40	39	47	45	42	35	32	33	29	36	30
	364	101	45	56	54	49	38	35	37	32	41	37
	508	141	47	59	57	51	40	37	38	34	44	40
	724	201	50	62	60	54	41	38	40	35	48	44
200	338	94	44	51	49	46	39	41	38	32	35	36
	565	157	47	57	55	50	41	43	41	35	42	39
	792	220	49	60	58	53	43	44	42	38	45	42
	1130	314	51	64	62	56	44	45	44	40	47	46
250	529	147	46	54	51	46	41	45	42	35	40	40
	882	245	50	59	55	50	43	47	44	38	44	41
	1238	344	53	62	58	53	44	48	45	40	47	42
	1768	491	56	65	62	56	46	49	47	43	50	45
300	842	234	45	51	51	46	36	46	41	35	42	40
	1404	390	50	57	56	50	41	47	43	38	45	41
	1966	546	53	61	60	53	44	47	44	39	48	43
	2804	779	56	65	63	55	47	48	45	41	51	47
350	736	204	48	55	55	45	42	47	46	38	45	43
	1944	540	58	64	62	52	46	52	52	46	51	49
	2952	820	62	68	65	56	48	54	54	49	54	51
	4031	1120	65	71	68	58	49	55	56	52	56	53
400	1357	377	53	59	58	49	47	52	50	45	49	47
	2261	628	59	64	61	52	48	54	54	48	52	50
	3168	880	63	67	63	55	50	56	56	51	54	52
	4525	1257	68	70	65	57	51	57	58	53	56	54
500	2120	589	58	59	55	49	50	55	53	45	51	49
	3535	982	63	64	60	53	52	57	56	50	54	53
	4946	1374	67	67	63	55	53	58	58	53	56	55
	7067	1963	70	71	66	58	55	60	61	57	59	57

			PRESSURE DROP :								500	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	41	46	45	41	33	35	41	37	38	38
	140	39	43	52	51	46	37	36	42	38	41	39
	198	55	45	55	55	49	39	38	43	39	43	40
	263	73	46	59	58	52	41	39	44	40	46	42
150	144	40	42	50	49	45	38	40	42	40	41	39
	364	101	47	58	57	53	42	43	46	43	47	43
	508	141	49	61	60	55	43	44	48	45	49	44
	724	201	52	65	64	58	44	46	49	46	52	48
200	338	94	46	54	52	49	43	48	47	43	46	44
	565	157	49	59	58	54	45	50	50	46	49	47
	792	220	51	63	61	57	46	51	52	48	52	48
	1130	314	54	66	65	60	48	52	53	50	54	50
250	529	147	44	58	55	50	44	51	51	46	49	48
	882	245	46	62	59	55	46	53	53	49	52	50
	1238	344	48	65	62	57	48	54	54	51	53	51
	1768	491	49	69	66	60	49	55	56	53	56	52
300	842	234	39	54	55	50	39	53	51	46	49	48
	1404	390	44	60	60	54	44	54	53	48	52	49
	1966	546	47	64	63	57	47	55	54	50	53	50
	2804	779	50	68	67	59	50	55	55	52	56	51
350	736	204	48	60	61	52	48	54	55	48	52	52
	1944	540	52	69	68	60	52	58	61	56	59	57
	2952	820	53	72	72	63	53	60	63	60	61	60
	4031	1120	55	75	74	66	55	62	65	62	63	62
400	1357	377	52	64	65	57	52	57	60	56	57	56
	2261	628	54	69	68	61	54	60	63	59	60	59
	3168	880	55	72	70	63	55	61	65	61	62	61
	4525	1257	56	75	72	65	56	63	67	63	64	64
500	2120	589	56	65	62	57	56	60	62	56	59	58
	3535	982	58	70	67	61	58	63	65	61	62	61
	4946	1374	59	73	70	64	59	64	67	64	64	63
	7067	1963	60	77	73	67	60	66	69	68	66	66

			PRESSURE DROP :								750	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	43	47	47	43	35	39	47	44	42	43
	140	39	45	52	52	48	38	41	48	45	45	45
	198	55	46	56	56	51	41	42	49	46	47	46
	263	73	47	59	60	54	42	43	50	47	49	46
150	144	40	43	51	51	48	41	44	48	47	45	45
	364	101	49	60	59	55	44	48	52	50	50	49
	508	141	51	63	63	58	45	49	54	52	52	50
	724	201	53	66	66	60	47	50	55	53	55	52
200	338	94	48	55	54	52	52	52	53	50	50	50
	565	157	51	61	60	56	54	54	56	53	53	52
	792	220	53	64	63	59	55	55	57	55	55	54
	1130	314	55	68	67	62	57	57	59	57	58	55
250	529	147	51	60	57	53	55	55	57	52	53	53
	882	245	55	65	62	58	56	56	59	55	56	55
	1238	344	58	68	65	60	57	57	60	58	58	56
	1768	491	61	71	68	63	58	58	61	60	60	58
300	842	234	50	57	57	52	41	57	58	52	54	54
	1404	390	55	62	62	56	46	58	59	55	56	55
	1966	546	58	66	66	59	49	59	60	57	58	56
	2804	779	61	70	69	62	52	60	61	58	60	57
350	736	204	53	63	65	59	51	57	61	55	57	57
	1944	540	63	71	72	66	55	62	66	63	63	63
	2952	820	67	75	75	69	57	64	69	66	66	65
	4031	1120	70	78	78	72	58	65	71	69	68	67
400	1357	377	59	67	70	63	56	61	66	62	62	62
	2261	628	65	72	73	67	58	63	69	65	65	65
	3168	880	69	75	75	69	59	65	71	68	67	67
	4525	1257	73	79	77	71	60	67	73	70	69	69
500	2120	589	67	69	68	64	61	64	67	63	64	63
	3535	982	72	74	73	68	63	66	70	68	67	67
	4946	1374	76	77	76	71	64	67	73	71	69	69
	7067	1963	79	81	79	74	65	69	75	75	72	72

Single Duct Terminal Unit - Bare

Model : WB-VAV-S-0

WB Air Distribution Products

Discharge Power Levels - Radiated Sound Level

			PRESSURE DROP :								100	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	**24**	36	33	25	23	21				17	
	140	**39**	38	39	30	28	24				22	16
	198	**55**	40	42	34	31	26	15			25	19
	263	**73**	41	46	38	34	28	16			28	22
150	144	**40**	37	34	26	25	24	16			20	16
	364	**101**	43	42	35	33	27	20			26	21
	508	**141**	45	45	38	35	29	21	15		28	23
	724	**201**	47	49	41	38	30	22	17		31	26
200	338	**94**	42	37	31	29	28	27	15		25	22
	565	**157**	45	43	37	34	30	28	18		28	23
	792	**220**	48	46	40	37	32	30	20		31	25
	1130	**314**	50	50	44	40	33	31	21	15	34	28
250	529	**147**	43	40	32	30	30	32	20		28	27
	882	**245**	47	45	37	34	32	33	22		30	28
	1238	**344**	50	48	40	37	34	34	23	16	32	29
	1768	**491**	53	51	43	40	35	35	25	18	35	30
300	842	**234**	43	37	33	30	26	30	18		26	25
	1404	**390**	48	43	38	34	31	31	20		29	26
	1966	**546**	51	46	41	36	33	32	21		32	27
	2804	**779**	55	50	45	39	36	32	22	16	35	28
350	736	**204**	45	39	33	27	29	34	23		29	29
	1944	**540**	54	47	40	34	33	38	29	21	34	33
	2952	**820**	58	51	43	37	35	40	32	24	37	35
	4031	**1120**	61	54	46	40	36	42	34	27	38	37
400	1357	**377**	49	43	36	30	35	39	28	21	34	33
	2261	**628**	55	48	39	33	36	41	31	24	36	36
	3168	**880**	59	51	40	35	38	43	33	26	38	37
	4525	**1257**	64	54	42	37	39	44	35	29	40	39
500	2120	**589**	52	42	34	31	39	42	31	21	37	36
	3535	**982**	58	47	39	35	40	44	34	26	39	39
	4946	**1374**	61	51	42	38	41	45	36	29	41	40
	7067	**1963**	65	54	45	41	43	47	39	32	42	42

			PRESSURE DROP :								250	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	**24**	39	34	28	26	24	21	20	15	22	17
	140	**39**	41	40	34	31	27	23	21	16	25	19
	198	**55**	42	44	38	34	29	24	22	17	28	22
	263	**73**	44	47	41	37	31	25	23	18	31	25
150	144	**40**	39	36	31	30	28	26	21	17	25	21
	364	**101**	45	45	39	37	31	29	25	21	31	25
	508	**141**	47	48	42	40	32	31	27	22	33	28
	724	**201**	50	51	46	43	34	32	28	23	36	31
200	338	**94**	44	40	35	34	32	35	27	21	31	30
	565	**157**	47	46	40	38	34	37	30	24	34	32
	792	**220**	49	49	44	41	35	38	31	26	36	33
	1130	**314**	51	53	48	45	37	39	33	28	39	34
250	529	**147**	46	43	36	34	33	39	31	23	34	34
	882	**245**	50	48	41	39	36	40	33	27	36	35
	1238	**344**	53	51	44	41	37	41	34	29	38	36
	1768	**491**	56	54	47	44	39	42	36	31	40	37
300	842	**234**	45	40	37	34	29	39	30	23	34	34
	1404	**390**	50	46	42	38	34	40	32	26	36	35
	1966	**546**	53	50	45	41	37	41	33	28	38	36
	2804	**779**	56	54	49	44	40	42	34	30	40	37
350	736	**204**	48	44	40	33	35	41	35	26	37	36
	1944	**540**	58	53	48	41	39	46	41	34	42	41
	2952	**820**	62	57	51	44	41	48	43	37	44	43
	4031	**1120**	65	60	53	46	42	49	45	40	46	44
400	1357	**377**	53	48	43	37	39	46	39	34	41	40
	2261	**628**	59	53	46	41	41	48	42	37	43	43
	3168	**880**	63	56	48	43	42	50	44	39	45	44
	4525	**1257**	68	60	50	45	44	51	47	41	47	46
500	2120	**589**	58	48	41	37	43	49	42	33	44	43
	3535	**982**	63	53	45	41	45	51	45	38	46	46
	4946	**1374**	67	56	48	44	46	52	47	42	48	47
	7067	**1963**	70	60	52	47	47	54	49	45	50	49

			PRESSURE DROP :								500	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	41	35	31	29	26	29	29	25	27	27
	140	39	43	41	36	34	29	30	31	26	30	28
	198	55	45	45	40	37	32	32	32	27	32	29
	263	73	46	48	44	40	34	33	33	28	34	30
150	144	40	42	39	34	34	31	34	31	28	31	29
	364	101	47	47	43	41	35	37	35	32	36	32
	508	141	49	50	46	44	36	38	37	33	38	34
	724	201	52	54	49	46	37	40	38	34	40	35
200	338	94	46	43	38	38	36	42	36	31	37	37
	565	157	49	48	43	42	38	44	39	34	40	39
	792	220	51	52	47	45	39	45	40	37	42	40
	1130	314	54	55	51	48	41	46	42	39	44	41
250	529	147	49	47	40	39	36	45	40	34	40	40
	882	245	53	51	45	43	39	46	42	37	42	41
	1238	344	56	55	48	46	40	47	43	39	44	42
	1768	491	59	58	51	49	42	48	45	42	46	43
300	842	234	48	43	40	38	32	47	40	34	41	42
	1404	390	52	49	46	42	37	48	42	37	43	43
	1966	546	56	53	49	45	39	48	43	39	44	43
	2804	779	59	57	53	48	42	49	44	40	46	44
350	736	204	51	49	47	41	40	48	44	37	43	42
	1944	540	61	58	54	48	44	52	50	44	49	47
	2952	820	65	61	57	52	46	54	52	48	51	49
	4031	1120	68	64	59	54	47	56	54	50	53	51
400	1357	377	57	53	51	46	45	51	49	44	48	46
	2261	628	63	58	54	49	47	54	52	47	50	49
	3168	880	67	61	56	51	48	55	54	49	52	50
	4525	1257	71	64	58	53	49	57	56	52	54	53
500	2120	589	63	54	48	45	49	54	50	44	50	49
	3535	982	69	59	53	49	51	57	54	49	53	51
	4946	1374	72	62	56	52	52	58	56	52	54	53
	7067	1963	76	66	59	55	53	60	58	56	57	55

			PRESSURE DROP :								750	Pa
D	AIR FLOW RATE		Frequency (Hz)									NR
mm	m3/h	l/s	63	125	250	500	1000	2000	4000	8000	dBA	dB
100	86	24	43	36	32	31	28	33	35	32	32	32
	140	39	45	41	38	36	31	35	37	33	34	34
	198	55	46	45	42	39	33	36	38	34	36	35
	263	73	47	48	45	42	35	37	39	35	37	35
150	144	40	43	41	36	36	33	38	37	35	36	34
	364	101	49	49	45	43	37	42	41	39	40	38
	508	141	51	52	48	46	38	43	43	40	42	39
	724	201	53	55	51	49	39	44	44	41	44	41
200	338	94	48	44	40	40	38	46	42	38	42	41
	565	157	51	50	45	44	40	48	44	41	44	43
	792	220	53	53	49	47	42	49	46	43	46	44
	1130	314	55	57	53	50	43	51	48	45	48	45
250	529	147	51	49	43	42	39	49	46	40	44	43
	882	245	55	54	48	46	41	50	48	44	46	45
	1238	344	58	57	51	49	42	51	49	46	48	46
	1768	491	61	60	54	52	44	52	50	48	49	47
300	842	234	53	46	43	40	34	51	46	41	46	46
	1404	390	63	51	48	45	38	52	48	43	47	47
	1966	546	67	55	51	47	41	53	49	45	48	48
	2804	779	70	59	55	50	44	54	50	47	50	48
350	736	204	53	52	51	47	44	51	49	43	48	46
	1944	540	63	61	58	54	48	56	55	51	53	52
	2952	820	67	64	61	58	50	58	58	54	56	54
	4031	1120	70	67	63	60	51	59	59	57	58	56
400	1357	377	59	56	56	52	49	55	54	50	52	51
	2261	628	65	61	59	55	51	57	58	54	55	54
	3168	880	69	64	61	57	52	59	60	56	57	56
	4525	1257	73	68	63	59	53	61	62	58	59	58
500	2120	589	67	58	54	53	54	58	56	51	54	52
	3535	982	72	63	58	57	55	60	59	56	57	56
	4946	1374	76	66	61	59	57	61	61	59	59	58
	7067	1963	79	70	65	62	58	63	64	63	62	61

Method Statements for VAV Box Airflow Performance Test

Objective

The objective of the VAV box flow test is to verify the accuracy of the air flow reading of the VAV box and performance of damper actuator. The air flow is read via the VAV controller compared with the reading from micromanometer

Tools Required

Basic tools required to perform the test are:

a) A fully assembled VAV box connected to ducting and supply fan with variable speed drive.

b) A setting unit (by others) for setting and displaying the parameter values for Vmin (%), Vmax (%), Volumetric Airflow (range 0 - 10 V)

c) A calibrated differential pressure gauge for delta P measurement (Micromanometer).

d) A calibrated anemometer for delta Q measurement .

Setting Up

a) Check the power supply available whether within voltage tolerance.

b) Set the N2 address of the VAV controller and turn it on.

c) Terminate VAV controller to the setting unit via terminal YC connecting cables.

d) Enter the VAV parameters such as the flow set points - cooling maximum flow Vmax (%) and occupied cooling minimum flow Vmin (%).

Test Procedures

a) Override the flow set point to maximum flow value.

b) Monitor the response of damper actuator to modulate until a stable air flow reading reaches the desired maximum flow.

c) Take the reading of the calibrated micromanometer differential pressure meter gauge and it should lead to the same flow rate monitored by calculation.

d) Override the flow set point to minimum flow value.

e) Monitor the response of damper actuator to modulate until a stable air flow reading reaches the desired occupied cooling minimum.

f) Take the reading of the calibrated micromanometer differential pressure meter gauge and it should lead to the same flow rate monitored by calculation.

g) Repeat the similar test for box sizes.

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Single Duct Terminal Unit - Bare

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Introduction of Air Flow Measurement

The VAV box air flow (supply flow) is calculated based on 2 parameters:

1) The supply box (area at the inlet of the box where the air flow pick up is located).

2) The flow pick up gain (supply pick up gain).

The VAV controller calculates the flow (supply flow) using the following equation:

Supply Flow = Supply Box Area x Flow Coefficient x Sqrt (Supply Delta P / Supply Pick Up Gain)

Supply Delta P is the differential pressure measured across the VAV box air inlet by using cross flow sensing tube.

Delta P = High End Pressure - Low End Pressure

Calculation of Vmax (%) and Vmin (%) is based on VAV controller delta Pmax at 300 Pa.

The VAV controller maximum air flow is determined by:

Q VAV max(CMH) **=** **K x Sqrt(*Delta Pmax)*, where K is the gain factor of the respective VAV box at nominal air flow Qnom.**

Example

VAV box size **300** diameter

K = 256.8

Max air flow set at **2720 CMH**

as per above formula - **Q vav max** (CMH) = 256.8 x Sqrt(300) = **4447.9 CMH**

V max (%) set = 2720 / 4447.9 x 100% = **61.15%**

Comparing with the manometer reading, it should read approximately 112 Pa which is 2717 CMH.

V min (%) set = 544 / 4447.9 x 100% = **12.23%**

Comparing with the manometer reading, it should read approximately 4 Pa which is 513 CMH.

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Single Duct Terminal Unit - Bare

Model : WB-VAV-S-0

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VAV BOX AIR FLOW PERFORMANCE TEST & CALIBRATION

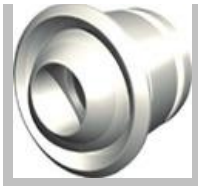
Dia mm	K	dP Nominal Pa	Nominal Flow Rate		
			CMH	CFM	L/S
100	21.5	150	263	155	73
125	35.6	150	436	257	121
150	71.9	150	750	441	208
200	116.5	150	1210	712	336
250	180.6	150	1440	847	400
315	268.2	150	3145	1850	874
355	329.1	150	4031	2371	1120
400	421.2	150	5159	3035	1433
500	666.3	150	8160	4801	2267

CLOSED BLADE LEAKAGE

Size	Inlet Diameter (mm)	Pressure Drop (Pa)	Leakage (l/s)
A	250	100	< 7
		200	< 7
		375	< 7
		500	< 7
B	315	100	< 7
		200	< 7
		375	< 7
		500	< 7
C	355	100	< 7
		200	< 7
		375	< 7
		500	< 7
D	400	100	< 7
		200	< 7
		375	< 7
		500	< 7
E	500	100	< 7
		200	< 7
		375	< 7
		500	< 7

CASING LEAKAGE

Size	Inlet Diameter (mm)	Pressure Drop (Pa)	Leakage (l/s)
A	250	100	2
		200	4
		375	7
		500	10
B	315	100	4
		200	8
		375	10
		500	12
C	355	100	7
		200	12
		375	15
		500	17
D	400	100	7
		200	12
		375	15
		500	17
E	500	100	7
		200	10
		375	13
		500	17

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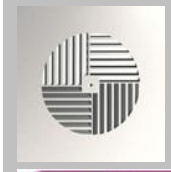


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