VAVBOX- VARIABLE AIR VOLUME TERMINAL BOXES

DESCRIPTION:

VAV terminal boxes for the supply air control in buildings with variable air volume systems and demanding acoustic requirements

VAV terminal boxes for variable volume systems, for supply and extract air, in 7 nominal sizes. Ready- to-use box consisting of mechanical parts and electronic control components. The boxes contain an averaging differential pressure sensor for volume flow measurement, a control damper and an integral silencer.

CONSTRUCTION:

Standard Material Galvanized Sheet Steel. Optional:.304-316 Stainless Steel, Aluminum

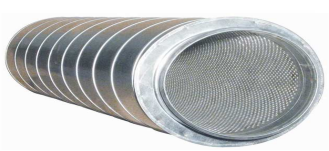
APPLICATION:

- VAV terminal boxes for variable volume systems, for supply and extract air, in 7 nominal sizes 150 – 9.000 m3/h flow range
- The boxes contain an averaging differential pressure sensor for air flow measurement, a control damper and an integral sound attenuator for reducing the air regenerated noise.
- The control damper blade with plastic seal when closed complies with the air tightness requirements of DIN EN 1751.
- There is a circular spigot connection on the fan (high pressure) end with a rectangular flange connection on the room (low pressure) end.

ACCESSORIES:

ELECTRO- HEATER

SOUND ATTENUATOR



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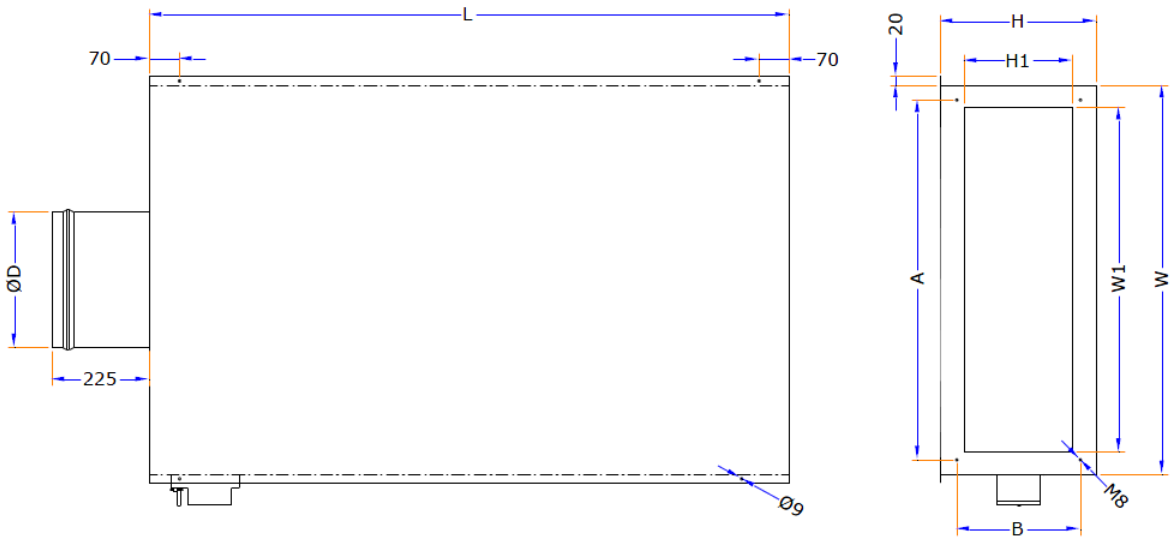
STANDARD DIMENSIONS:

VAV BOX - ACC



Dimensions (mm)													Weight (kg)	
Nominal Diameter	ØD	BOX			BOX - With Insulation			K	A	B	H_1	W_1	BOX	With Insulation
		L	W	H	L	W	H							
125	123	1000	300	236	1000	380	316	115	184	234	150	200	21	41
160	158	1000	410	236	1000	490	316	140	184	344	150	310	25	50
200	198	1200	560	281	1200	640	361	175	244	494	210	460	33	63
250	248	1200	600	302	1200	780	391	215	234	634	200	600	55	95
315	313	1500	900	361	1500	980	441	265	284	834	250	800	73	133
400	398	1500	1000	446	1500	1080	526	335	384	934	350	900	118	193

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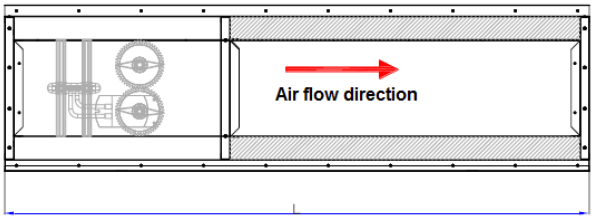
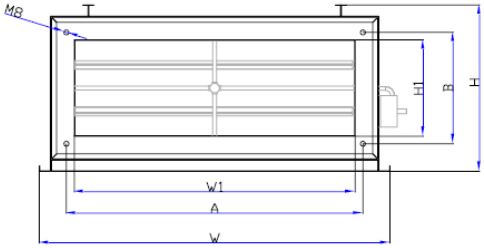
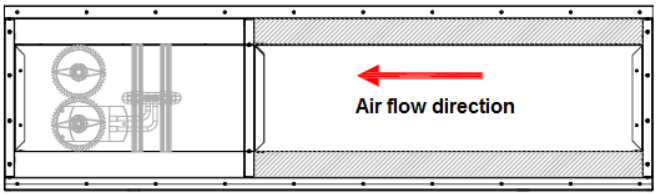
VAV BOX - ACF

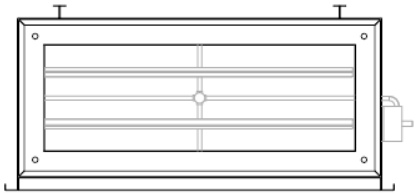
SUPPLY AIR





RETURN AIR





Dimensions - (mm)											Weight (kg)	
Nominal Diameter	ACF			ACF-Insulation			A	B	W_1	H_1	ACF	ACF insulation
	L	W	H	L	W	H						
125	1000	300	250	1000	340	290	234	184	200	150	21	41
160	1000	410	250	1000	450	290	344	184	310	150	25	50
200	1200	560	300	1200	600	340	494	234	460	200	33	63
250	1200	700	300	1200	740	340	634	234	600	200	55	95
315	1200	900	350	1200	940	390	834	284	800	250	73	133
400	1200	1000	450	1200	1040	490	934	384	900	350	118	193

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PERFORMANCE DATA

Nominal sizes	125 – 400 mm
Volume flow rate range	15 – 1680 l/s or 54 – 6048 m^3/h
Volume flow rate control range (unit with dynamic differential pressure measurement)	Approx. 10 – 100% of the nominal volume flow rate
Minimum differential pressure	5 – 80 Pa
Maximum differential pressure	1000 Pa
Operating temperature	10 – 50 °C

QUICK SELECTION - ACC

Product Code	Velocity (m/s)					
	2	4	6	8	10	12
VAV BOX	Flow Rate m^3/h					
125	86	171	257	342	428	513
160	141	282	423	564	705	847
200	222	443	665	886	1108	1329
250	348	695	1043	1390	1738	2086
315	554	1107	1661	2215	2769	3322
400	895	1791	2686	3581	4476	5372
500	1402	2803	4205	5607	7009	8410
Pressure Loss (Pa)	20	25	30	40	60	90

QUICK SELECTION - ACF

Product Code	Velocity (m/s)					
	2	4	6	8	10	12
	Flow Rate m^3/h					
ACF - 125	86	171	257	342	428	513
ACF - 160	141	282	423	564	705	847
ACF - 200	222	443	665	886	1108	1329
ACF - 250	348	695	1043	1390	1738	2086
ACF - 315	554	1107	1661	2215	2769	3322
ACF - 400	895	1791	2686	3581	4476	5372
Pressure Loss (Pa)	10	25	60	105	165	240

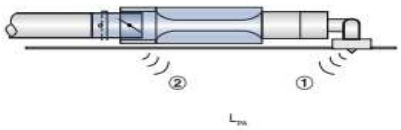
VAVBOX- VARIABLE AIR VOLUME TERMINAL BOXES

ACC-Volume flow rate ranges and minimum differential pressures

Nominal size	① V̇	② V̇	$\Delta p_{st\ min}$		ΔV
	l/s	m³/h	Pa	Pa	± %
125	15	54	5	5	19
	60	216	15	25	8
	105	378	45	65	7
	150	540	90	130	5
160	25	90	5	5	19
	100	360	15	20	8
	175	630	40	50	7
	250	900	80	100	5
200	40	144	5	5	19
	160	576	15	20	8
	280	1008	40	50	7
	405	1458	80	100	5
250	60	216	5	5	19
	250	900	15	20	8
	430	1548	40	50	7
	615	2214	80	100	5
315	100	360	5	5	19
	410	1476	15	20	8
	720	2592	40	60	7
	1030	3708	80	120	5
400	170	612	5	5	19
	670	2412	15	20	8
	1175	4230	40	60	7
	1680	6048	80	120	5

ACC-Sound pressure level at differential pressure 150 Pa

Nominal size	V̇	V̇	Air-regenerated noise		Case-radiated noise	
			①	②	①	③
			L_{PA}	L_{PA1}	L_{PA2}	L_{PA3}
	l/s	m³/h	dB(A)			
125	15	54	17	16	21	<15
	60	216	24	20	24	16
	105	378	29	24	27	19
	150	540	34	29	32	23
160	25	90	18	16	20	<15
	100	360	28	24	25	18
	175	630	35	29	29	21
	250	900	36	30	35	27
200	40	144	16	<15	22	15
	160	576	21	17	27	20
	280	1008	23	17	31	23
	405	1458	31	24	39	31
250	60	216	16	15	22	16
	250	900	17	<15	26	19
	430	1548	22	15	29	22
	615	2214	31	21	37	28
315	105	378	18	15	21	15
	410	1476	21	16	27	19
	720	2592	24	18	33	24
	1030	3708	29	22	38	29
400	170	612	17	<15	25	17
	670	2412	19	15	29	20
	1175	4230	26	20	33	25
	1680	6048	32	27	43	35



① Air-regenerated noise
② Case-radiated noise

Note:
① VAV Box
② VAV Box with secondary silencer

FUNCTION

Room temperature controller

In VAV systems, the room temperature control takes the form of a cascade control. The primary controlled variable is the room temperature. The output signal of the room temperature controller is not fed directly to the supply air control damper but alters the set point value of the supply air flow rate control circuit. The flow rate control also generates minimum and maximum limits for the air flow which has benefits in keeping the room temperature constant and for the functioning of the overall room air conditioning system.

Flow rate measurement

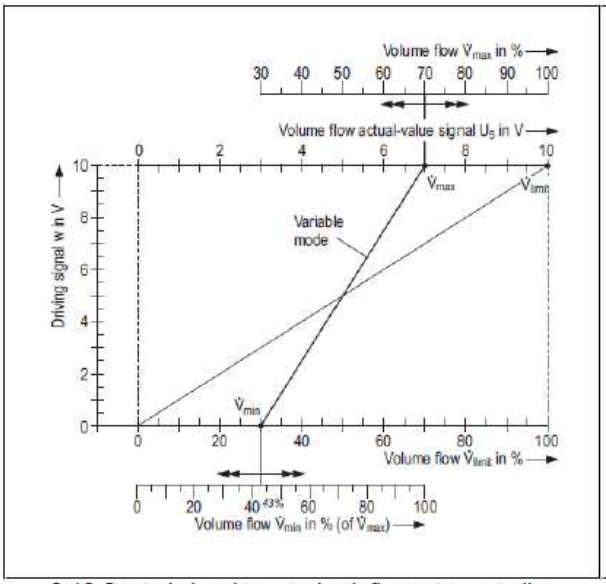
A sensor is necessary for the positive measurement of air flows, this is achieved by pressure measurement at several points distributed over the cross-section and provision of the resulting average value. The GMCAIR differential pressure sensor is an optimum solution in terms of economics and product technology. This sensor delivers exact results for most room air conditioning applications based on normal upstream flow conditions.

Volume flow control

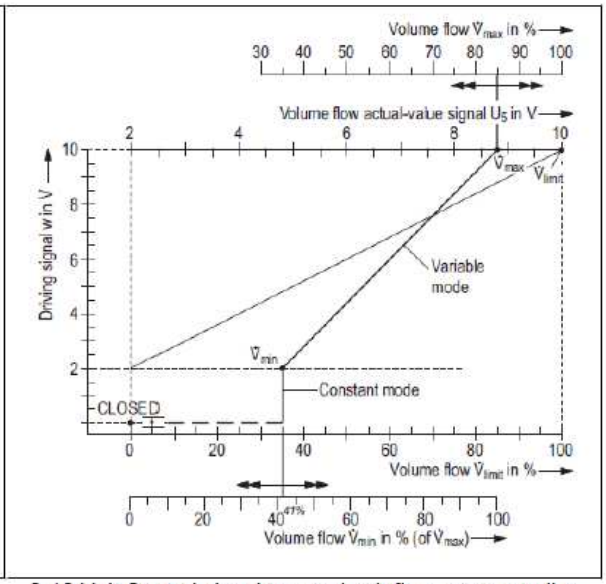
The control of the flow rate takes place in a closed control circuit, i.e. measurement – comparison – control. A pressure transducer converts the pressure differential into an electrical signal, which is interpreted as the actual value by the controller. In most applications, the set point value comes from a room temperature controller. The controller compares the actual value with the set point value and from the difference between these two alters the control signal to the damper actuator.

Supply/extract air tracking control

In individual rooms and closed-off office areas, where the balance between supply and extract air flow rate has to be maintained. Otherwise, annoying whistling noises can occur at door gaps, and the doors can be difficult to pen. For this reason, the extract air should also have variable control in a VAV system. The actual value of the supply air is fed as an input signal to the extract air controller (slave controller). In this way, the extract air flow rate automatically follows the supply air flow rate, even in the case where this has not reached its set point value.

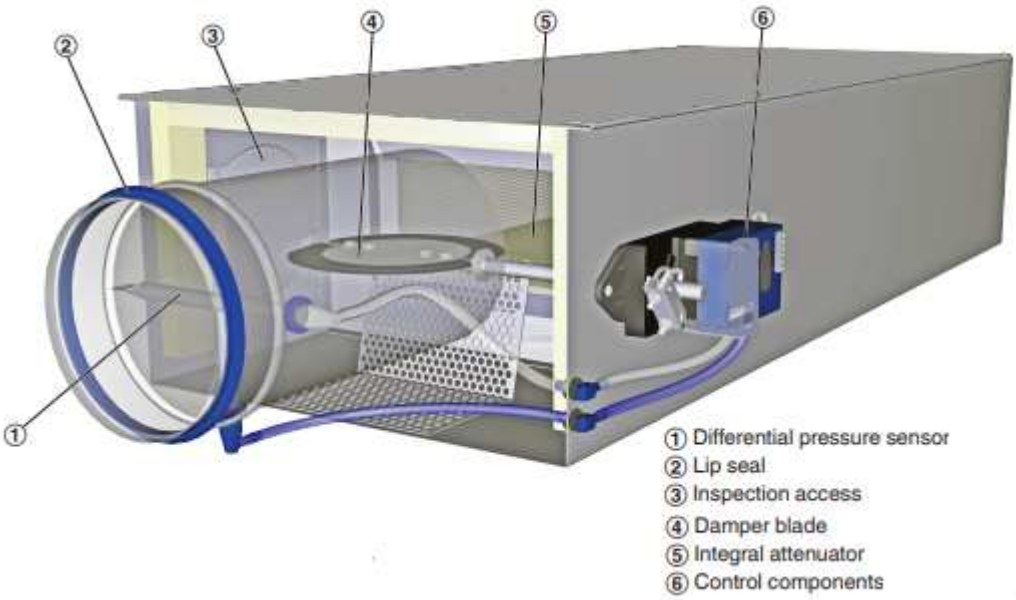


0-10 Control signal to supply air flow rate controller



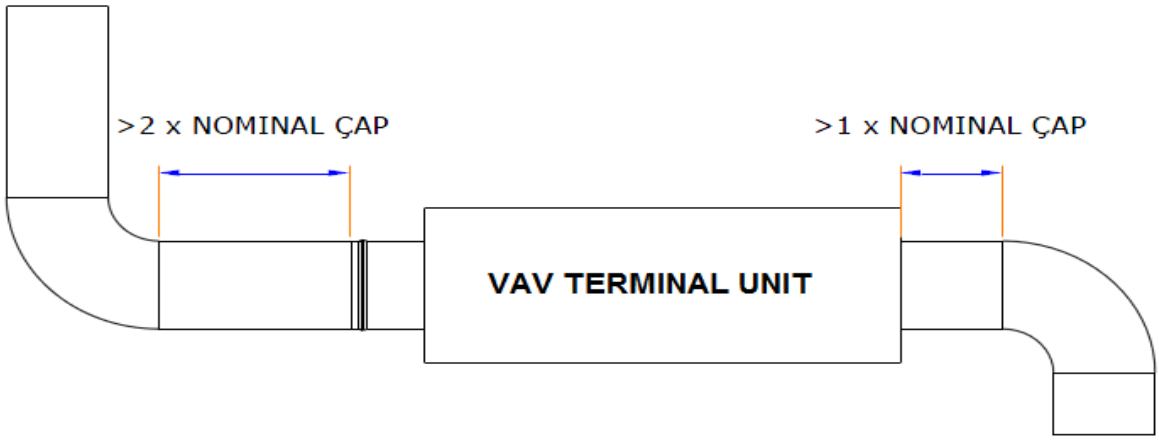
2-10 Volt Control signal to supply air flow rate controller

CONSTRUCTION



INSTALLATION

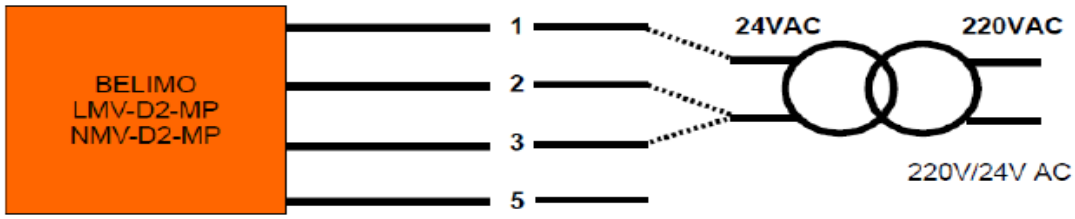
To avoid unnecessary controller errors, the min. distances according to the following table / drawings must be observed. For combinations of several connection pieces or pieces with fire dampers or silencers, the larger minimum distances must be observed



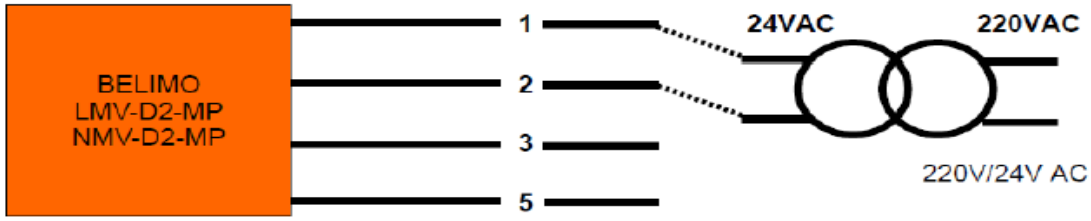
Connection piece with bend: 1 x D	1xD
Other connection pieces: (e.g. T-junction, branching piece, reduction piece, etc.) 2 x D	2xD
Fire dampers: 2 x D	2xD
Silencer: 2 x D	2xD

START- UP

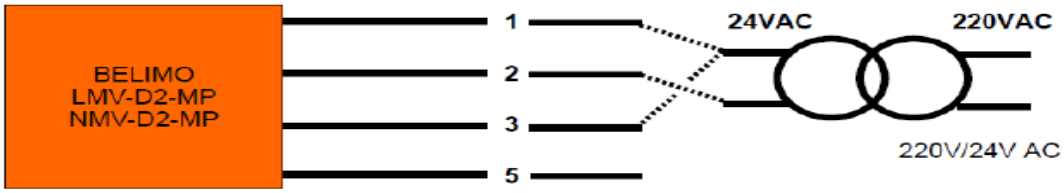
V_{max} Settings



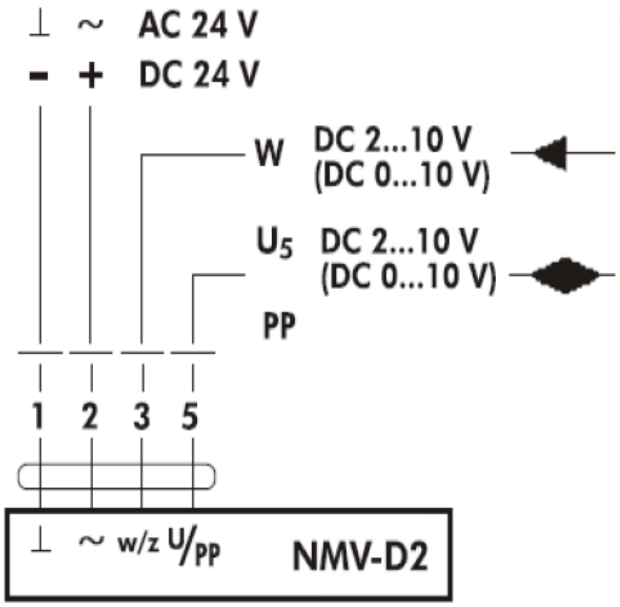
V_{min} Settings



Shut-off Settings



Full Automatic



VAVBOX- VARIABLE AIR VOLUME TERMINAL BOXES

ORDER CODE

VAVBOX-ACC	G	01	L1000	S	D 125

VAVBOX -ACC
VAVBOX - ACF

G: Galvanised Chasis
P: Stainless Steel
A: Aluminum

00: No Insulation
01: Heat Insulation
02: Sound Insulation
03: Heat + Sound Insulation

L: Requested Product Length

E: ELECTRO- HEATER
S: SOUND ATTENUATOR

N: Neck Size
D: Neck Diameter