

## TECHNICAL INFORMATION

<b>APPLICATION</b>	Airflow type	Variable, supply and extraction
<b>CONSTRUCTION</b>	Shape	Rectangular
	Air flow control	Aluminum differential pressure sensor
	Length	1200 mm, 1400 mm, 1800 mm
	Min. height	255 mm
	Max. height	455 mm
	Min. width	250 mm
	Max. width	700 mm
	Frame size	E25 (25 mm)
<b>MATERIAL</b>	Standard material	Galvanised steel (275 g/m <sup>2</sup> )
	Blades	Galvanised steel (275 g/m <sup>2</sup> )
	Insulation	Casing: mineral wool 25 mm Baffles: melamine
<b>MOUNTING</b>	Mounting options	mounting brackets standard (4)
<b>PERFORMANCE</b>	Certification	Casing: Class C (EN12237) Damper: Class 3 (EN1751)
	Min. air velocity	Defined @ 1,0 m/s
	Max. air velocity	Defined @ 10 m/s
<b>ACTUATOR</b>	Standard actuator	Grada G1: 227VM compact volume flow controller with display and integrated control
	Input signal	2-10V (standard), 0-10V
	Output signal	2-10V (standard), 0-10V
	Operating voltage	24 VAC/VDC +/-20%
	Operating conditions	0...+50°C - IP 42

## BB EXTRA SOUNDPROOF RECTANGULAR VAV UNIT

Variations **BBA** **BBT**



VAV / CAV box being used for both supply (BBT) and exhaust (BBA). The galvanised steel unit is equipped with an electronic actuator and aluminum differential pressure sensor. Casing and blade damper are rated class C3 according to air tightness standards EN12237 and EN1751. Excellent sound attenuation levels are obtained by mineral wool casing insulation and internal baffles. May be equipped with heat exchanger for cooling/heating. Available with extra external sound attenuator.

Designed for flow rates from 75 up to 6000 m<sup>3</sup>/h

Available in 7 sizes

Standard equipped with silencer

Optionally, a heat exchanger can be mounted on the box outlet



SQUARE DUCT



AIR BEHAVIOUR SYSTEMS



SOUND FRIENDLY



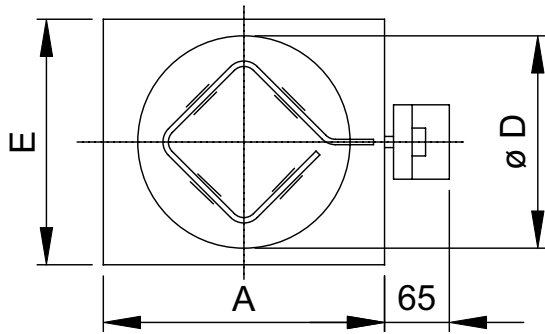
VAV

# EXTRA SOUNDPROOF RECTANGULAR VAV UNIT

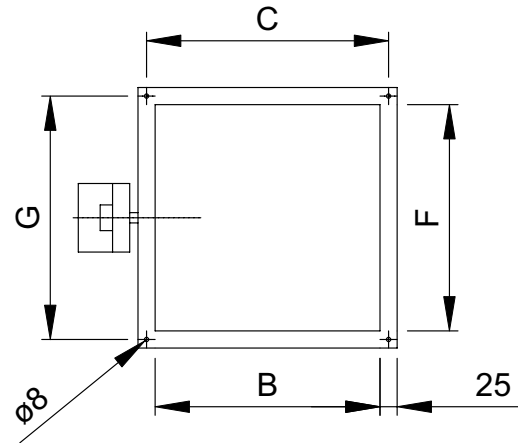
BBA BBT

## DRAWING

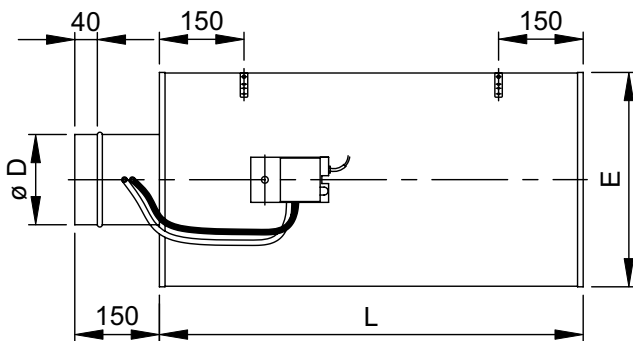
SUPPLY



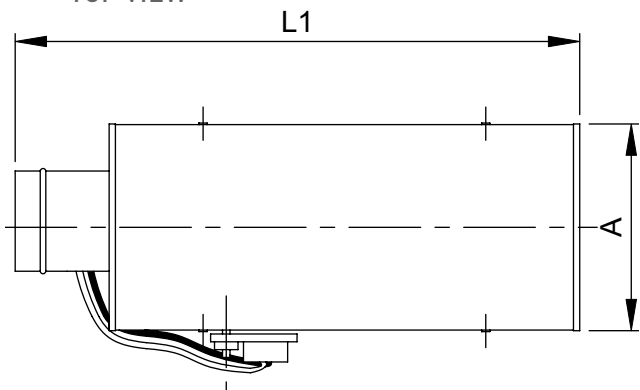
EXHAUST



SIDE VIEW



TOP VIEW



mm	A	B	C	Ø D	E	F	G	L	L <sub>1</sub>
125	250	200	220	123	255	200	220	1200	1350
160	300	250	270	158	255	200	220	1200	1350
200	450	400	420	198	255	200	220	1200	1350
250	450	400	420	248	355	300	320	1400	1550
315	650	600	620	313	380	325	345	1400	1550
355	655	605	625	353	410	355	375	1800	1950
400	700	650	670	398	455	400	420	1800	1950

## MEASUREMENT OF THE VOLUMETRIC AIR FLOW RATE - GRADA G1 ACTUATOR

- the setpoint value signal  $Y$  depends on the chosen mode, i.e. 0-10 V DC or 2-10 V DC. The lower and upper limit correspond to  $V_{\min}$  and  $V_{\max}$  respectively. Speciality of input mode 2-10 V DC: in the range of  $Y = 0-0.8$  V DC the override command **Close** will be detected.

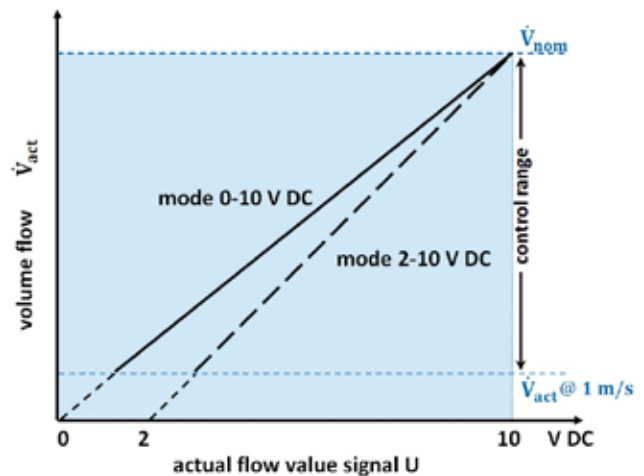
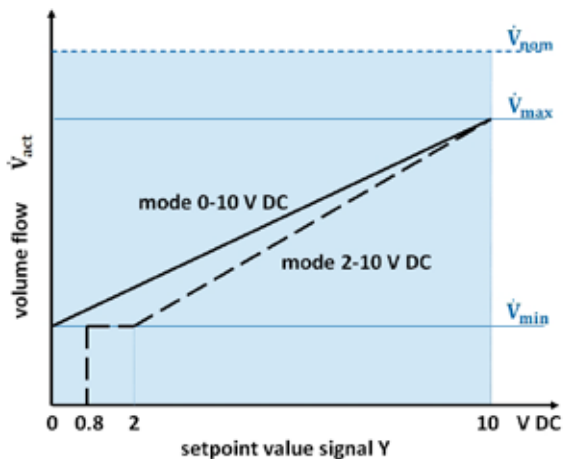


- the output/feedback signal  $U$  represents the actual flow and follows the selected mode of operation (0-10 V DC or 2-10 V DC). The signal  $U$  is proportional to the selected  $V_{\text{nom}}$  value.

- $V_{\text{nom}}$ : nominal volume flow rate [(m<sup>3</sup>/h) or [l/s)] corresponding at a sensor pressure difference of 250 Pa. Upper limit of the flow setting range and the maximum volume flow rate setpoint value for the VAV unit.

- $V_{\min}$ : lower limit of the operating range for the VAV unit that can be set by the installer. It is smaller than or equal to  $V_{\max}$ ; it may equal zero. It corresponds to the setpoint signal minimum, i.e. 0 or 2 V DC.

- $V_{\max}$ : upper limit of the operating range for the VAV unit that can be set by the installer. It is smaller than or equal to  $V_{\text{nom}}$ . It corresponds to the setpoint signal maximum, i.e. 10 V DC.



## MEASUREMENT ACCURACY

- Duct velocities larger than 1.2 m/s are recommended, and should not go below 1 m/s. At lower air velocities measurement accuracies cannot be guaranteed.

VELOCITY [m/s]	MEASUREMENT ERROR [%]
≥ 1	< 10
≥ 1.2	< 5

- The above volume flow rate accuracy applies only to situations with a straight upstream section of the duct according to ISO 5219 / EN 1751, and measured according ISO 3966. The actuators show a measurement error of <5% with respect to ISO 3966 in the recommended working range. For upstream 90° bends a minimum distance of straight duct of twice the inlet diameter is needed to have negligible effects on volume flow rate measurements.

NOMINAL AIR FLOW ( $V_{NOM}$  (@ 250 PA))

∅(mm)	125	160	200	250	315	355	400
$V_{nom}$ (m <sup>3</sup> /h)	569	1124	1820	2924	4917	6124	7720

# EXTRA SOUNDPROOF RECTANGULAR VAV UNIT



## SELECTIE

### AIR DISCHARGE NOISE

GROOTTE	Q <sub>v</sub>		v	p <sub>s</sub> = 100 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		m/s	125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]
125	68	0,019	1,5	26	22	10	4	<BGL	<BGL	<BGL	<20	<15	<12	<7
	132	0,037	3,0	32	29	18	12	6	<BGL	<BGL	23	18	15	10
	175	0,049	4,0	35	31	22	16	9	<BGL	<BGL	26	21	18	13
	220	0,061	5,0	38	34	24	19	13	<BGL	<BGL	28	23	20	15
	265	0,074	6,0	40	35	27	21	15	<BGL	<BGL	30	25	22	17
	355	0,099	8,0	42	38	30	25	19	<BGL	<BGL	34	28	26	20
160	110	0,031	1,5	29	26	19	11	<BGL	<BGL	<BGL	21	15	13	7
	220	0,061	3,0	36	32	26	18	<BGL	<BGL	<BGL	27	21	19	13
	290	0,081	4,0	39	34	28	20	0	<BGL	<BGL	30	24	22	16
	360	0,100	5,0	41	36	30	22	6	<BGL	<BGL	32	26	24	18
	435	0,121	6,0	43	37	32	24	10	<BGL	<BGL	33	28	25	20
	580	0,161	8,0	45	39	35	26	17	<BGL	<BGL	36	31	28	23
200	170	0,047	1,5	19	13	8	10	1	9	14	<20	21	<12	13
	340	0,094	3,0	30	23	18	17	9	12	16	23	23	15	15
	450	0,125	4,0	34	27	23	19	12	13	17	26	24	18	16
	560	0,156	5,0	38	31	26	22	14	14	17	29	25	21	17
	680	0,189	6,0	41	34	29	23	16	15	18	31	25	23	17
	900	0,250	8,0	45	38	34	26	19	16	19	35	30	27	22
250	270	0,075	1,5	12	2	<BGL	4	<BGL	<BGL	6	<20	<15	<12	<7
	530	0,147	3,0	26	17	11	13	4	3	12	<20	19	<12	11
	700	0,194	4,0	31	23	17	17	8	7	14	22	21	14	13
	880	0,244	5,0	36	28	21	20	12	10	16	26	23	18	15
	1060	0,294	6,0	40	32	25	22	15	12	17	29	25	21	17
	1420	0,394	8,0	46	39	31	26	19	16	20	35	29	27	21
315	430	0,119	1,5	37	26	21	15	6	7	11	24	18	16	10
	830	0,231	3,0	41	32	26	20	12	12	14	30	22	22	14
	1120	0,311	4,0	43	35	28	22	15	14	16	32	25	24	17
	1400	0,389	5,0	45	37	30	24	17	15	17	34	27	26	19
	1680	0,467	6,0	46	39	31	25	19	17	18	35	29	27	21
	2250	0,625	8,0	49	42	33	27	22	19	19	38	32	30	24
355	550	0,153	1,5	34	27	21	15	10	12	9	24	18	16	10
	1080	0,300	3,0	42	33	26	20	15	15	13	30	23	22	15
	1430	0,397	4,0	45	36	28	23	18	17	15	33	26	25	18
	1780	0,494	5,0	47	38	29	24	20	18	16	35	29	27	21
	2150	0,597	6,0	49	40	31	26	21	19	17	37	31	29	23
	2850	0,792	8,0	52	43	33	28	24	20	19	40	35	32	27
400	700	0,194	1,5	33	12	8	5	3	6	11	<20	18	<12	10
	1350	0,375	3,0	40	24	17	14	11	12	15	26	22	18	14
	1800	0,500	4,0	44	29	21	18	15	14	16	30	25	22	17
	2250	0,625	5,0	46	33	24	21	17	16	18	32	28	24	20
	2700	0,750	6,0	48	36	27	24	20	18	19	35	30	27	22
	3600	1,000	8,0	52	41	31	27	23	20	20	38	34	30	26

## AIR DISCHARGE NOISE

GROOTTE [mm]	Q <sub>v</sub>		v m/s	p <sub>e</sub> = 150 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]	[NR]
125	68	0,019	1,5	28	23	10	5	<BGL	<BGL	<BGL	<20	<15	<12	<7
	132	0,037	3,0	34	30	19	13	7	<BGL	<BGL	24	19	16	11
	175	0,049	4,0	37	32	22	17	11	<BGL	<BGL	27	22	19	14
	220	0,061	5,0	39	35	25	20	14	<BGL	<BGL	29	24	21	16
	265	0,074	6,0	41	36	28	22	16	<BGL	<BGL	31	26	23	18
	355	0,099	8,0	44	39	31	26	20	<BGL	<BGL	35	29	27	21
160	110	0,031	1,5	31	27	19	13	<BGL	<BGL	<BGL	22	16	14	8
	220	0,061	3,0	38	33	26	19	5	<BGL	<BGL	28	22	20	14
	290	0,081	4,0	40	35	29	22	9	<BGL	<BGL	31	25	23	17
	360	0,100	5,0	42	37	31	23	12	<BGL	<BGL	33	27	25	19
	435	0,121	6,0	44	38	33	25	15	<BGL	<BGL	34	29	26	21
	580	0,161	8,0	47	40	36	28	20	<BGL	<BGL	37	32	29	24
200	170	0,047	1,5	20	14	8	13	4	8	13	<20	20	<12	12
	340	0,094	3,0	31	25	19	19	11	12	16	24	23	16	15
	450	0,125	4,0	35	29	23	21	13	13	17	27	24	19	16
	560	0,156	5,0	38	32	27	23	15	14	18	30	25	22	17
	680	0,189	6,0	41	35	30	25	17	16	18	32	26	24	18
	900	0,250	8,0	46	39	34	27	20	17	19	36	30	28	22
250	270	0,075	1,5	21	9	5	8	<BGL	<BGL	6	<20	<15	<12	<7
	530	0,147	3,0	31	22	16	16	5	4	12	21	20	13	12
	700	0,194	4,0	36	27	21	19	10	8	15	26	22	18	14
	880	0,244	5,0	40	31	25	22	13	12	17	29	25	21	17
	1060	0,294	6,0	43	35	28	24	16	14	19	32	26	24	18
	1420	0,394	8,0	47	40	34	28	21	19	22	37	30	29	22
315	430	0,119	1,5	39	29	20	15	7	9	8	26	19	18	11
	830	0,231	3,0	43	35	26	20	14	14	14	31	25	23	17
	1120	0,311	4,0	45	37	29	23	17	16	16	34	27	26	19
	1400	0,389	5,0	47	39	31	25	19	18	18	35	29	27	21
	1680	0,467	6,0	48	41	33	26	21	19	19	37	31	29	23
	2250	0,625	8,0	50	43	35	29	24	21	22	39	34	31	26
355	550	0,153	1,5	36	29	23	15	11	13	11	26	19	18	11
	1080	0,300	3,0	43	36	27	21	17	17	15	32	25	24	17
	1430	0,397	4,0	46	38	29	24	20	19	17	35	28	27	20
	1780	0,494	5,0	49	40	31	25	22	20	19	37	31	29	23
	2150	0,597	6,0	51	42	32	27	24	22	20	38	33	30	25
	2850	0,792	8,0	54	45	34	29	26	23	22	41	36	33	28
400	700	0,194	1,5	34	17	13	7	4	9	10	20	18	12	10
	1350	0,375	3,0	42	27	21	16	13	14	15	28	23	20	15
	1800	0,500	4,0	45	32	25	19	16	17	17	31	27	23	19
	2250	0,625	5,0	48	36	27	22	19	19	19	34	29	26	21
	2700	0,750	6,0	50	39	29	25	22	20	20	37	32	29	24
	3600	1,000	8,0	53	43	33	29	25	23	23	40	36	32	28

# EXTRA SOUNDPROOF RECTANGULAR VAV UNIT



## AIR DISCHARGE NOISE

GROOTTE	Q <sub>v</sub>		v	p <sub>s</sub> = 200 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		m/s	125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]
125	68	0,019	1,5	30	24	10	7	2	6	7	<20	<15	<12	<7
	132	0,037	3,0	36	31	19	15	9	10	10	25	20	17	12
	175	0,049	4,0	38	33	23	18	13	12	11	28	23	20	15
	220	0,061	5,0	40	36	26	21	15	13	12	31	25	23	17
	265	0,074	6,0	42	37	29	23	17	14	13	33	27	25	19
	355	0,099	8,0	45	40	33	27	21	16	14	36	30	28	22
160	110	0,031	1,5	33	28	20	15	11	0	6	24	17	16	9
	220	0,061	3,0	40	34	27	21	16	8	11	30	23	22	15
	290	0,081	4,0	42	36	29	23	18	10	13	32	26	24	18
	360	0,100	5,0	44	38	31	25	19	13	14	34	28	26	20
	435	0,121	6,0	46	39	33	27	20	15	16	36	29	28	21
	580	0,161	8,0	48	41	36	29	22	18	18	38	32	30	24
200	170	0,047	1,5	21	16	7	15	6	7	12	<20	20	<12	12
	340	0,094	3,0	31	26	19	21	12	11	15	25	23	17	15
	450	0,125	4,0	36	30	23	23	15	13	17	28	24	20	16
	560	0,156	5,0	39	33	27	25	17	15	18	31	25	23	17
	680	0,189	6,0	42	36	30	26	19	16	19	33	26	25	18
	900	0,250	8,0	47	40	35	29	21	18	20	37	31	29	23
250	270	0,075	1,5	29	16	13	13	<BGL	<BGL	5	<20	<15	<12	<7
	530	0,147	3,0	37	27	22	20	7	5	13	26	20	18	12
	700	0,194	4,0	41	31	26	22	11	10	16	29	23	21	15
	880	0,244	5,0	43	34	29	25	15	13	19	32	26	24	18
	1060	0,294	6,0	46	37	32	27	18	16	21	35	28	27	20
	1420	0,394	8,0	49	42	36	30	23	21	24	39	32	31	24
315	430	0,119	1,5	41	32	20	14	8	10	6	28	22	20	14
	830	0,231	3,0	45	37	27	21	15	16	13	33	27	25	19
	1120	0,311	4,0	47	40	30	24	19	18	16	35	30	27	22
	1400	0,389	5,0	48	41	32	26	21	20	19	37	32	29	24
	1680	0,467	6,0	49	43	34	27	23	22	21	38	33	30	25
	2250	0,625	8,0	51	45	37	30	26	24	24	41	35	33	27
355	550	0,153	1,5	39	31	24	16	12	15	12	28	21	20	13
	1080	0,300	3,0	45	38	29	22	19	19	18	34	28	26	20
	1430	0,397	4,0	48	40	31	25	22	21	20	36	30	28	22
	1780	0,494	5,0	50	42	32	26	24	23	22	38	33	30	25
	2150	0,597	6,0	52	44	34	28	26	24	23	40	35	32	27
	2850	0,792	8,0	55	47	35	31	28	26	25	43	38	35	30
400	700	0,194	1,5	36	21	19	8	6	12	9	23	17	15	9
	1350	0,375	3,0	43	31	25	17	14	17	16	30	24	22	16
	1800	0,500	4,0	47	35	28	21	18	20	18	34	28	26	20
	2250	0,625	5,0	49	39	30	23	21	21	21	36	31	28	23
	2700	0,750	6,0	51	41	32	26	23	23	22	38	34	30	26
	3600	1,000	8,0	55	46	35	30	27	25	25	42	37	34	29

## CASE-RADIATED NOISE

GROOTTE [mm]	Q <sub>v</sub>		v m/s	p <sub>e</sub> = 100 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]	[NR]
125	68	0,019	1,5	29	24	8	3	8	3	<BGL	<20	<15	<12	<7
	132	0,037	3,0	36	30	17	11	12	9	<BGL	25	19	17	11
	175	0,049	4,0	39	33	20	15	14	11	<BGL	28	22	20	14
	220	0,061	5,0	41	35	24	18	15	13	<BGL	30	25	22	17
	265	0,074	6,0	43	37	26	20	16	14	<BGL	32	26	24	18
	355	0,099	8,0	46	39	30	24	18	17	<BGL	35	29	27	21
160	110	0,031	1,5	31	29	18	13	15	14	5	24	19	16	11
	220	0,061	3,0	36	34	25	19	20	16	11	29	24	21	16
	290	0,081	4,0	39	36	28	22	22	18	13	31	25	23	17
	360	0,100	5,0	41	37	30	23	23	19	15	33	27	25	19
	435	0,121	6,0	42	38	32	25	25	19	16	35	28	27	20
	580	0,161	8,0	45	40	34	28	27	20	19	37	30	29	22
200	170	0,047	1,5	23	20	12	18	8	19	18	24	25	16	17
	340	0,094	3,0	33	30	22	23	16	21	20	29	27	21	19
	450	0,125	4,0	38	33	26	26	20	21	20	31	27	23	19
	560	0,156	5,0	41	36	29	27	22	22	21	34	28	26	20
	680	0,189	6,0	44	39	32	29	25	22	21	36	29	28	21
	900	0,250	8,0	49	43	36	31	28	23	22	39	33	31	25
250	270	0,075	1,5	17	7	2	<BGL	<BGL	<BGL	<BGL	<20	<15	<12	<7
	530	0,147	3,0	36	29	24	19	16	7	4	27	20	19	12
	700	0,194	4,0	33	26	21	16	13	3	1	24	16	16	8
	880	0,244	5,0	37	30	25	20	16	9	6	28	21	20	13
	1060	0,294	6,0	40	34	29	24	19	13	10	31	25	23	17
	1420	0,394	8,0	45	39	34	29	23	19	17	37	30	29	22
315	430	0,119	1,5	37	26	22	20	11	9	7	26	20	18	12
	830	0,231	3,0	42	33	27	25	18	15	13	31	25	23	17
	1120	0,311	4,0	44	36	30	27	21	18	16	34	27	26	19
	1400	0,389	5,0	46	39	32	29	23	20	18	36	29	28	21
	1680	0,467	6,0	47	41	33	30	25	22	20	38	31	30	23
	2250	0,625	8,0	49	44	36	32	28	25	23	40	35	32	27
355	550	0,153	1,5	38	26	27	19	11	11	13	27	22	19	14
	1080	0,300	3,0	44	33	30	24	18	17	17	33	26	25	18
	1430	0,397	4,0	46	36	32	26	21	19	18	35	28	27	20
	1780	0,494	5,0	48	38	33	28	24	21	20	37	30	29	22
	2150	0,597	6,0	50	40	34	29	26	22	21	38	32	30	24
	2850	0,792	8,0	53	43	36	32	29	25	23	41	35	33	27
400	700	0,194	1,5	36	9	9	7	5	2	2	20	16	12	8
	1350	0,375	3,0	42	22	19	16	14	11	10	28	23	20	15
	1800	0,500	4,0	45	28	24	20	18	15	14	31	27	23	19
	2250	0,625	5,0	47	33	27	24	22	18	17	34	29	26	21
	2700	0,750	6,0	49	36	30	26	24	21	19	36	31	28	23
	3600	1,000	8,0	52	42	34	31	28	25	23	40	35	32	27



# EXTRA SOUNDPROOF RECTANGULAR VAV UNIT



## CASE-RADIATED NOISE

GROOTTE [mm]	Q <sub>v</sub>		v m/s	p <sub>s</sub> = 150 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]	[NR]
125	68	0,019	1,5	32	24	9	3	6	4	<BGL	<20	<15	<12	<7
	132	0,037	3,0	38	30	18	12	11	10	<BGL	26	20	18	12
	175	0,049	4,0	41	33	22	15	13	13	<BGL	29	23	21	15
	220	0,061	5,0	43	35	25	18	15	15	<BGL	31	25	23	17
	265	0,074	6,0	45	37	27	21	16	16	<BGL	33	27	25	19
	355	0,099	8,0	48	40	31	24	19	19	<BGL	36	30	28	22
160	110	0,031	1,5	32	30	19	16	18	16	8	26	22	18	14
	220	0,061	3,0	38	35	26	21	22	19	13	31	25	23	17
	290	0,081	4,0	40	36	29	24	24	20	15	33	27	25	19
	360	0,100	5,0	42	38	31	25	25	20	16	34	28	26	20
	435	0,121	6,0	44	39	33	27	26	21	18	36	29	28	21
	580	0,161	8,0	46	41	35	29	28	22	20	38	31	30	23
200	170	0,047	1,5	24	21	12	19	12	18	17	24	24	16	16
	340	0,094	3,0	35	30	22	25	19	21	20	30	27	22	19
	450	0,125	4,0	39	34	26	27	22	22	21	33	28	25	20
	560	0,156	5,0	43	37	29	29	25	23	21	35	29	27	21
	680	0,189	6,0	46	40	32	31	27	23	22	37	31	29	23
	900	0,250	8,0	50	44	37	33	29	24	23	41	34	33	26
250	270	0,075	1,5	25	11	10	5	<BGL	<BGL	<BGL	<20	<15	<12	<7
	530	0,147	3,0	34	23	21	16	10	2	2	23	17	15	9
	700	0,194	4,0	38	28	26	20	14	8	7	27	21	19	13
	880	0,244	5,0	41	32	29	24	18	12	11	31	25	23	17
	1060	0,294	6,0	43	36	32	27	21	16	15	34	28	26	20
	1420	0,394	8,0	47	41	37	31	25	21	20	39	33	31	25
315	430	0,119	1,5	39	30	22	20	12	11	9	27	20	19	12
	830	0,231	3,0	43	36	28	25	19	17	15	33	25	25	17
	1120	0,311	4,0	45	39	31	28	22	19	18	35	29	27	21
	1400	0,389	5,0	47	41	33	30	25	21	19	37	31	29	23
	1680	0,467	6,0	48	42	35	31	27	23	21	39	33	31	25
	2250	0,625	8,0	50	45	38	34	30	25	23	41	36	33	28
355	550	0,153	1,5	41	32	24	22	15	13	12	29	22	21	14
	1080	0,300	3,0	44	35	31	25	21	18	17	33	27	25	19
	1430	0,397	4,0	47	37	32	27	23	20	19	36	28	28	20
	1780	0,494	5,0	49	39	33	29	25	22	20	37	31	29	23
	2150	0,597	6,0	51	41	35	30	27	23	22	39	33	31	25
	2850	0,792	8,0	53	44	36	32	30	26	23	41	36	33	28
400	700	0,194	1,5	35	13	14	7	8	6	7	21	15	13	7
	1350	0,375	3,0	42	25	22	17	16	14	14	28	23	20	15
	1800	0,500	4,0	45	30	26	21	20	17	17	32	27	24	19
	2250	0,625	5,0	48	34	29	24	23	20	19	35	30	27	22
	2700	0,750	6,0	50	38	31	27	25	22	21	37	32	29	24
	3600	1,000	8,0	53	43	35	31	29	25	23	41	36	33	28

## CASE-RADIATED NOISE

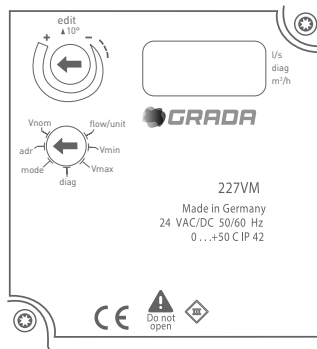
GROOTTE [mm]	Q <sub>v</sub>		v m/s	p <sub>e</sub> = 200 Pa (L <sub>w</sub> )							L <sub>w</sub>		L <sub>p</sub> = L <sub>w</sub> -8dB	
	m <sup>3</sup> /h	m <sup>3</sup> /s		125	250	500	1000	2000	4000	8000	[dB(A)]	[NR]	[dB(A)]	[NR]
125	68	0,019	1,5	35	24	10	4	5	5	11	21	18	13	10
	132	0,037	3,0	41	31	19	12	11	11	14	27	21	19	13
	175	0,049	4,0	43	33	23	16	13	14	15	30	24	22	16
	220	0,061	5,0	45	36	26	19	15	16	17	32	27	24	19
	265	0,074	6,0	47	37	29	21	17	18	17	34	29	26	21
	355	0,099	8,0	50	40	33	25	19	21	19	37	32	29	24
160	110	0,031	1,5	34	31	20	18	21	18	10	28	24	20	16
	220	0,061	3,0	40	35	27	24	24	21	15	32	27	24	19
	290	0,081	4,0	42	37	30	26	26	22	17	34	29	26	21
	360	0,100	5,0	44	38	32	27	27	22	18	36	30	28	22
	435	0,121	6,0	45	40	34	29	28	23	19	37	31	29	23
	580	0,161	8,0	47	41	36	31	30	24	21	39	33	31	25
200	170	0,047	1,5	26	21	11	20	17	17	16	25	24	17	16
	340	0,094	3,0	36	31	22	26	23	21	20	31	27	23	19
	450	0,125	4,0	41	35	26	29	25	22	21	34	29	26	21
	560	0,156	5,0	44	38	30	31	27	23	22	36	31	28	23
	680	0,189	6,0	47	41	33	32	28	24	23	38	32	30	24
	900	0,250	8,0	52	45	37	35	31	26	24	42	35	34	27
250	270	0,075	1,5	33	14	19	11	<BGL	<BGL	<BGL	<20	<15	<12	<7
	530	0,147	3,0	40	26	27	20	11	7	9	28	23	20	15
	700	0,194	4,0	42	31	30	24	15	12	13	32	26	24	18
	880	0,244	5,0	45	34	33	27	19	15	16	34	29	26	21
	1060	0,294	6,0	47	38	35	29	22	18	19	37	31	29	23
	1420	0,394	8,0	50	43	39	33	27	23	23	41	35	33	27
315	430	0,119	1,5	41	33	22	19	13	12	12	29	23	21	15
	830	0,231	3,0	45	38	29	26	20	18	17	34	28	26	20
	1120	0,311	4,0	47	41	32	29	24	20	19	37	31	29	23
	1400	0,389	5,0	48	42	34	31	26	22	21	39	33	31	25
	1680	0,467	6,0	49	44	36	32	28	24	22	40	34	32	26
	2250	0,625	8,0	51	46	39	35	32	26	24	43	36	35	28
355	550	0,153	1,5	37	31	28	20	18	15	13	29	23	21	15
	1080	0,300	3,0	44	37	31	25	23	20	18	34	27	26	19
	1430	0,397	4,0	47	39	33	27	25	22	20	37	29	29	21
	1780	0,494	5,0	49	41	34	29	27	23	21	38	31	30	23
	2150	0,597	6,0	51	42	35	30	28	25	23	40	34	32	26
	2850	0,792	8,0	54	44	37	33	31	26	24	42	37	34	29
400	700	0,194	1,5	35	17	18	8	10	10	12	22	20	14	12
	1350	0,375	3,0	42	28	25	18	18	17	17	30	24	22	16
	1800	0,500	4,0	46	33	28	22	22	19	19	33	27	25	19
	2250	0,625	5,0	48	36	31	25	24	22	21	36	30	28	22
	2700	0,750	6,0	50	39	33	28	27	23	22	38	32	30	24
	3600	1,000	8,0	54	44	36	32	30	26	24	42	36	34	28

# EXTRA SOUNDPROOF RECTANGULAR VAV UNIT

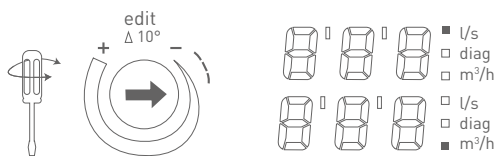
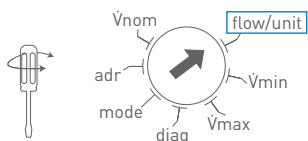
BBA BBT

## BA/BT ACTUATOR SETUP

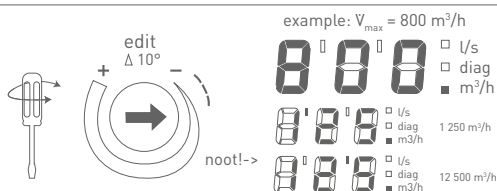
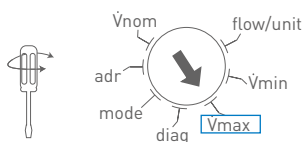
USE OF THE MOTOR G1



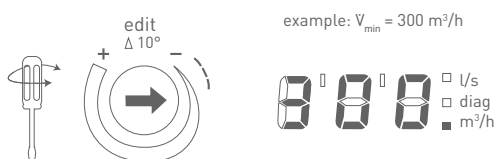
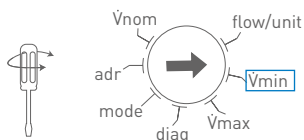
### 1. AIRFLOW/UNIT SECTION



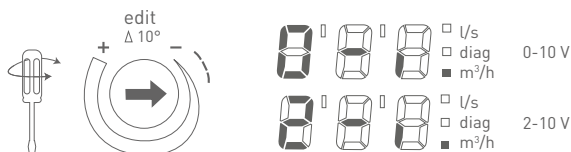
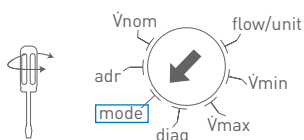
### 2. V<sub>MAX</sub> VALUE SETUP



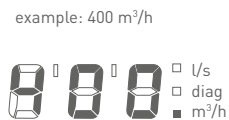
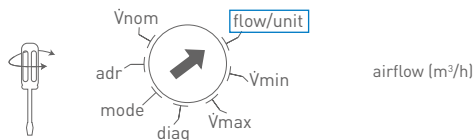
### 3. V<sub>MIN</sub> VALUE SETUP



### 4. CONTROL



### READOUT

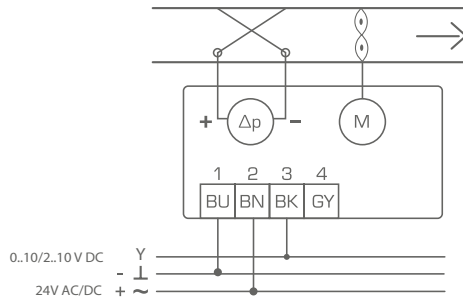


## DIAGNOSTICS

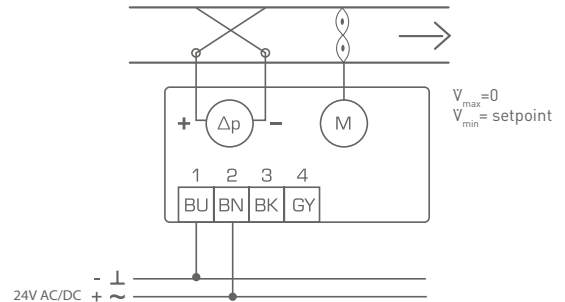


WIRING DIAGRAMS

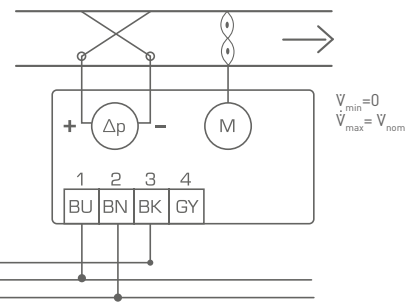
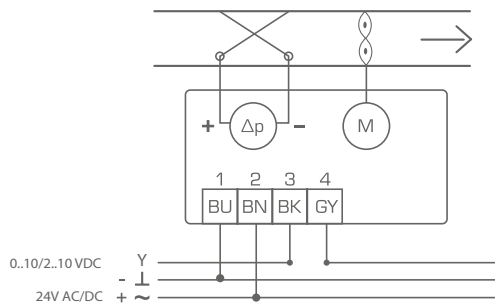
VAV OPERATION



CAV CONSTANT MIN VOLUME

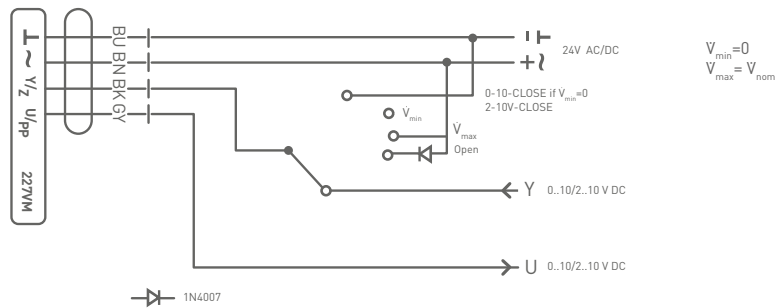


MASTER SLAVE CONTROL



FORCED CONTROL

The controller can be force controlled to following positions via closing contacts.



Close: Y = connected to ground conductor of 24 VAC supply (only with mode 2-10 V DC)

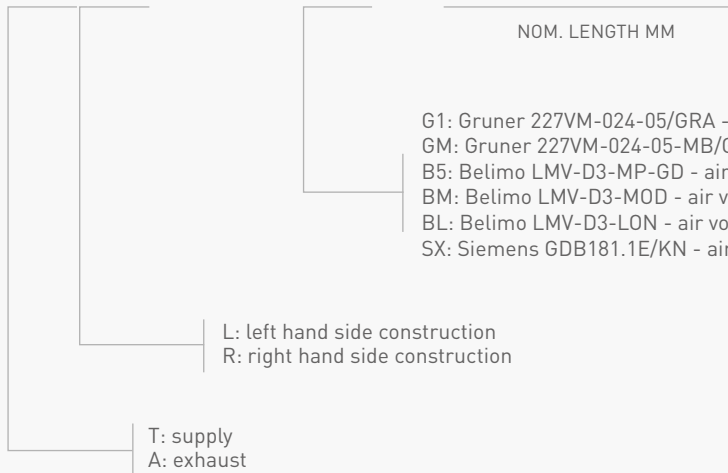
$V_{min}$ : Y = disconnected

$V_{max}$ : Y = full wave from 24 VAC supply

Open: Y = pos. rectified half wave from 24 VAC supply

HOW TO ORDER ?

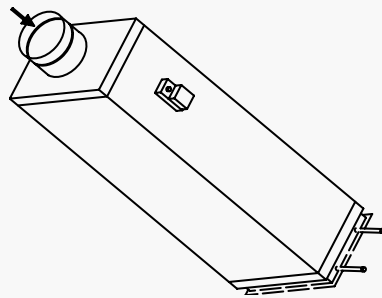
B	B	A	L	0	0	G1	0	1	2	5
---	---	---	---	---	---	----	---	---	---	---



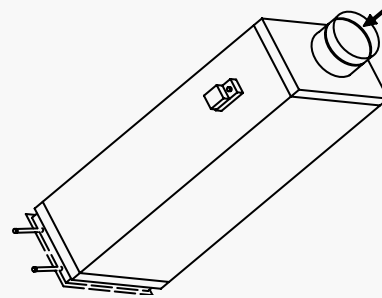
- G1: Gruner 227VM-024-05/GRA - air volume controller - 5Nm
- GM: Gruner 227VM-024-05-MB/GRA - air volume controller - 5Nm - MODBUS
- B5: Belimo LMV-D3-MP-GD - air volume controller - 5Nm
- BM: Belimo LMV-D3-MOD - air volume controller - 5Nm - MODBUS / BACNET
- BL: Belimo LMV-D3-LON - air volume controller - 5Nm - LON
- SX: Siemens GDB181.1E/KN - air volume controller - 5Nm - KNX

L: left hand side construction  
R: right hand side construction

T: supply  
A: exhaust

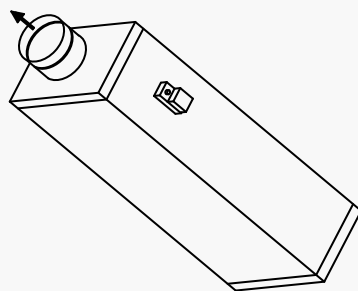


SUPPLY



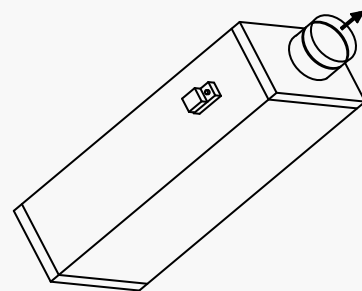
Left hand side construction

Right hand side construction



Left hand side construction

EXHAUST



Right hand side construction

FACTORY SETTINGS - GRADA G1 ACTUATOR

- $V_{max}$  corresponds to the air flow rate at a duct air velocity of 10 m/s.
- $V_{min}$  corresponds to the air flow rate at a duct air velocity of 1.5 m/s.
- Mode 2 - 10 V DC