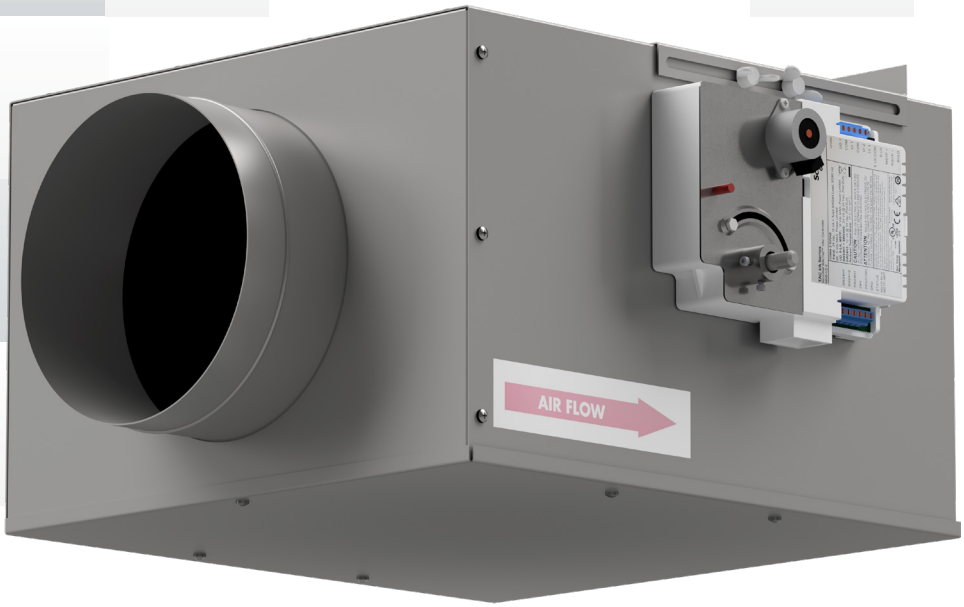
ONLINE SELECTION TOOL
www.airselect.nl



BY-PASS VAV

PRESSURE INDEPENDENT AIR VOLUME CONTROL TERMINAL

NP TYPE

BARCOL-AIR
AIR DISTRIBUTION

Circular by-pass VAV

Type designation

Composition type designation:

N - P - O - A - O - O - O

N Position 1: **Product group**

N = air volume control terminals

P Position 2: **Function**

P = single duct, circular by-pass VAV terminal

O Position 3: **Controls (manufacturer)**

O = controls, specify separately

A Position 4: **Outlet**

A = rectangular outlet
G = rectangular outlet and provision for integral hot water reheat coil
N = rectangular outlet and provision for integral electric reheat coil
1 = non standard, specify separately

O Position 5: **Reheat coil**

O = without reheat coil
A = 1-row hot water reheat coil
B = 2-row hot water reheat coil
D = 4-row hot water reheat coil
E = 1-stage 230VAC/1-phase electric reheat coil
F = 2-stage 230VAC/1-phase electric reheat coil
G = 3-stage 230VAC/1-phase electric reheat coil
H = 1-stage 400VAC/3-phase electric reheat coil
J = 2-stage 400VAC/3-phase electric reheat coil
T = Thyristor controlled (specify separately)
1 = non standard, specify separately

O Position 6: **Controls (type & function)**

O = not applicable

O Position 7: **Sensor**

O = not applicable (pressure dependent)

Ordering example:

N	P	O	A	O	O	O		1	6	0	R		0	0	0	0
Type								Model 100-400			Handing controls & Heater		Electric heater capacity (Watt)			

Ordering information:

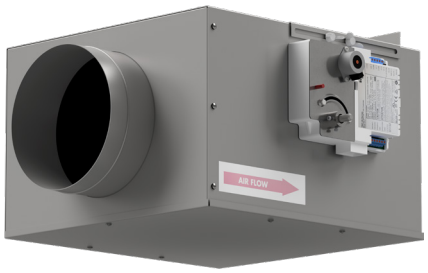
Standard terminals:

- quantity of terminals
- complete 7 digit code
- terminal size or model
- control handing (standard right side)
- if applicable, electric reheat coil capacity

Non standard terminals:

- for non standard terminals a full description and/or drawing are requested

Type NP.....



Application

Type NP is a circular by-pass VAV air volume control terminal. The terminal is designed for both cooling and heating systems.

In by-pass VAV application, the terminal controls the air volume to the room. Depending on the cooling load the damper either opens or closes, changing the air pumped in to the serving area and that what is bypassed through the by-pass section which is either connected to a return channel or simply blows out the air above the false ceiling.

The damper movement is regulated by a roomthermostat. Dependent on the indoor temperature and set point, the correct amount of fresh air will be supplied to the room.

Alternatively the by-pass VAV terminals can be controlled on CO_2 basis.

The by-pass terminal has a single wall construction internally lined with acoustic thermal insulation.

Features:
- Pressure dependent control functions.
- Volume control range 100% down to 10%
- Low pressure loss over the terminal.
- Single wall construction.
- Factory fitted distribution plenum with built-in hot water or electric reheat coil.
- Low noise production.
- Suitable for all control functions (VAV, CAV, shut-off, etc.)
- Maintenance free.

Technical information

Casing:
Single wall, air-tight construction made of galvanized sheet steel (non spiral), casing leakage rate to Class II VDI 3803 or DIN 24 194 part 2. Duct-sleeve connections at the in- and outlet are suitable for DIN 24 145 or DIN 24 146 connections. Casing is internally lined with 13 mm thermic, acoustic and erosion proof cladding.

Insulation:
13 mm thermic, acoustic and erosion proof cladding. (30 kg/m^3) complying to: NFPA90A and 90B surface burning characteristics, BS476 part 6 and 7 fire propagation, UL 181 class 0 surface spread of flame and UL 94 HF1 flamability.

Damper:
Damper blade made of galvanized sheet steel. Damper shaft: aluminium, ø10 mm with self lubricating Nylon bearings.

Distribution plenum:
Made of galvanized sheet steel with 13 mm internal isolation. Plenum with standard rectangular outlet construction.

Reheat coil:
Choice of 1-, 2- or 4-row hot water reheat coil or electric reheat coil (230VAC/1-phase or 400VAC/3-phase).
More detailed technical information can be found in the separate NO documentation.

Controls:
Suitable for use with pneumatic, analogue electronic or DDC controllers. Controls can be factory fitted, wired and calibrated. Controls enclosure (galvanized sheet steel) can be provided optionally.

Delivery format:

- The by-pass VAV or CAV terminal will be supplied as a single mounting assembly. Optional ordered, reheat coil and/or controls are factory fitted, wired and calibrated. The on-site delivered terminal can directly be installed and commissioned.
- Controls location and hot water or electric connections are as a standard fitted on the right hand side of the terminal when looking in the direction of the airflow.
- On request, the terminal can be delivered with connections on the left hand side.
- When terminals are ordered with controls, these will be factory fitted, wired and calibrated upon request.
- For terminals ordered with ‘free-issue’ third party controls, wiring diagrams and mounting instructions must be provided.

Circular by-pass VAV

Technical data

Type NP.....

Specify as:

Example:
Supply and install, by-pass variable air volume terminals, single-wall construction, constructed from galvanized sheet steel. The casing leakage rate shall be classified according to class II, VDI 3803/DIN 24 194
and the duct-sleeve connections shall be suitable for DIN 24 145 or DIN 24 146 respectively. The VAV terminals shall have a galvanized sheet steel damper blade and an aluminium damper shaft with self lubricating Nylon bearings.

The terminals shall be supplied with hot water or electric reheat coil.

The controller shall be I/A Series, DDC controller:
LonMark® compatible, type MNL-V2RVx
or
BACnet® compatible, type MNB-V2.

Controls must be factory fitted, wired and calibrated.

Ordering example: type – model – handing
= NPOAOOO – 200R

Manufacturer: Barcol-Air, the Netherlands

Installation Instructions:

The Barcol-Air VAV terminals shall be installed using at least two support brackets (DIN-rail or L-profile), with anti-vibration rubber under the terminal. Each of these brackets shall be fixed with two threaded rods to the ceiling slab above.

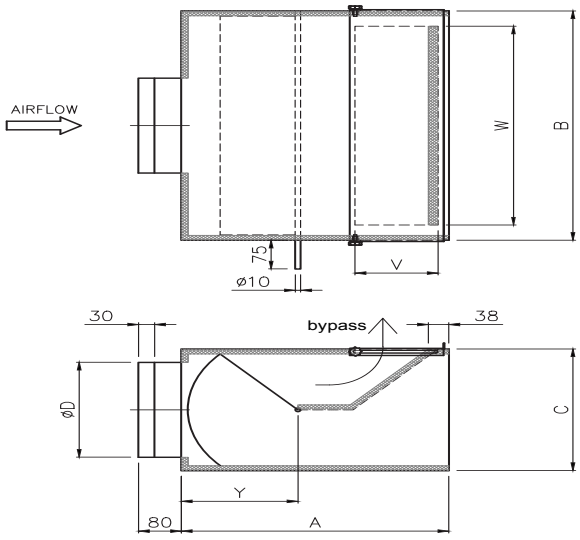
This installation method:

1. Shall prevent the body of the VAV terminal from high mechanical tension, which could damage the construction and performance of the terminal.
2. Shall prevent torsion on the VAV terminals, which could cause malfunction of the damper blades.
3. Provides some flexibility to the final location of the VAV terminals.
4. Use at least 1x diameter straight duct length before the VAV inlet.

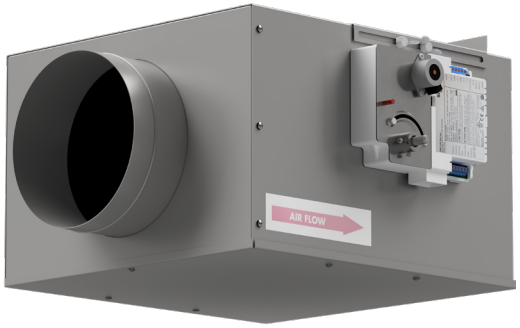
5. Additional manual volume control dampers (VCD's) before the inlet are not required / recommended!!
6. All connections shall be thermally isolated.

Installation of circular VAV terminals can be done in a similar way, with the only assumption that two circular support brackets with anti-vibration rubber (installation clamps) instead of DIN-rail or L-profile shall be used. To prevent the VAV terminal from rotation, we recommend to use a complete clamp (support + top bracket), so that the terminal is 'clammed' in between.

Optional 4 x Mupro fixing hooks can be used (see drawing).



Type NPOAOOO



Type NPOAOOO

Dimensions NP terminal

Model	100	125	160	200	250	315	355	400
A	370	370	420	420	520	620	620	670
B	330	330	400	400	600	600	600	600
C	228	228	248	268	318	408	408	458
ØD	98	123	158	198	248	313	353	398
V	100	100	110	120	180	220	220	245
W	250	250	320	320	520	520	520	520
Y	168	168	182	196	231	295	295	330

All dimensions in mm

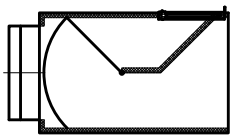
Circular by-pass VAV

Sound data

Type NPOAOOO

Sound data ∆ p = 125 Pa

Model	data refering to inlet spigot				min. Δp_s	Δ p = 125 Pa																	
						discharge sound									radiated sound								
						L_w in dB/Oct. (re 1pW)						Lp values			L_w in dB/Oct. (re 1pW)						Lp values		
	velocity	air volume				125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	dB(A)	NC	NR	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	dB(A)	NC	NR
	m/s	l/s	CFM	m^3/h	Pa	dB									dB								
100	2	15	31	53	2	43	44	40	38	34	22	--	--	--	-	-	-	-	-	-	--	--	--
	4	29	62	106	8	49	50	46	44	40	29	--	--	--	22	-	-	-	-	-	--	--	--
	6	44	94	160	17	53	54	51	48	44	34	--	--	--	26	20	-	-	-	18	--	--	--
	8	59	125	213	30	57	58	54	52	49	39	22	--	--	29	23	19	19	19	21	--	--	--
	10	74	156	266	47	59	61	58	55	52	43	25	--	22	32	26	22	21	21	23	--	--	--
	12	89	189	320	68	62	64	61	58	56	47	27	22	25	33	27	23	23	23	25	--	--	--
125	2	23	49	84	2	40	43	40	39	34	25	--	--	--	-	-	-	-	-	-	--	--	--
	4	47	99	168	7	47	49	46	45	40	31	--	--	--	23	18	-	-	-	-	--	--	--
	6	70	149	253	16	52	54	51	49	44	36	--	--	--	27	22	19	18	-	19	--	--	--
	8	94	198	337	28	56	58	55	53	48	40	21	--	--	30	25	22	21	20	22	--	--	--
	10	117	248	421	44	59	61	58	56	51	44	25	--	22	33	28	25	23	22	24	--	--	--
	12	140	297	504	63	62	64	62	59	54	48	28	22	25	34	29	26	25	24	26	--	--	--
160	2	39	82	139	2	39	41	40	38	37	32	--	--	--	18	-	-	-	-	-	--	--	--
	4	78	164	279	7	47	48	46	44	41	36	--	--	--	25	20	19	-	-	-	--	--	--
	6	116	246	418	15	52	52	50	49	44	39	--	--	--	29	24	23	20	18	20	--	--	--
	8	155	328	558	26	56	56	54	52	48	42	20	--	--	32	27	26	23	21	23	--	--	--
	10	194	410	697	41	60	60	58	56	51	45	24	--	20	34	29	28	25	23	25	--	--	--
	12	232	492	835	59	63	63	61	59	54	48	27	21	24	36	31	30	27	25	27	--	--	--
200	2	61	129	219	2	39	34	37	34	30	23	--	--	--	19	-	-	-	-	-	--	--	--
	4	122	258	439	6	48	44	46	42	37	31	--	--	--	26	22	21	18	-	-	--	--	--
	6	183	387	658	14	54	51	52	47	42	36	--	--	--	30	26	25	22	20	21	--	--	--
	8	244	516	878	25	58	55	56	51	46	40	21	--	--	33	29	28	25	22	24	--	--	--
	10	305	645	1097	39	61	59	60	54	50	43	24	--	20	35	31	30	27	25	26	--	--	--
	12	367	778	1321	56	65	63	63	57	53	46	28	21	24	37	33	32	29	27	28	--	--	--
250	2	96	203	345	1	41	43	42	39	34	30	--	--	--	19	-	-	-	-	-	--	--	--
	4	192	406	690	6	50	51	50	45	40	35	--	--	--	26	21	21	18	-	-	--	--	--
	6	288	609	1035	13	56	56	55	50	44	39	20	--	--	30	25	25	22	20	21	--	--	--
	8	383	812	1380	23	60	60	59	53	47	43	24	--	21	33	28	28	25	23	24	--	--	--
	10	479	1015	1725	36	63	63	62	56	50	45	28	21	24	35	31	31	27	25	26	--	--	--
	12	575	1218	2070	52	66	66	65	59	53	48	31	25	27	37	32	32	29	27	28	--	--	--
315	2	153	324	550	1	42	45	41	41	38	33	--	--	--	21	18	18	-	-	-	--	--	--
	4	306	648	1101	5	52	52	48	47	43	38	--	--	--	28	25	25	22	18	19	--	--	--
	6	459	971	1651	12	58	57	54	52	48	42	21	--	--	32	29	29	26	22	23	--	--	--
	8	612	1295	2202	22	63	61	58	56	52	46	25	--	21	35	32	32	29	25	26	--	--	--
	10	764	1619	2752	34	67	64	62	59	55	50	29	22	25	38	34	34	31	27	28	--	--	--
	12	920	1949	3312	49	71	67	65	62	59	53	32	26	29	39	36	36	33	29	30	--	--	--
355	2	195	412	701	1	42	52	45	45	40	38	--	--	--	22	19	19	-	-	-	--	--	--
	4	389	824	1401	5	53	56	51	50	43	42	20	--	--	29	26	26	23	18	20	--	--	--
	6	584	1236	2102	12	59	60	56	54	46	45	24	--	20	33	30	30	27	23	24	--	--	--
	8	779	1649	2803	21	64	63	60	57	50	48	27	21	24	36	33	33	30	25	27	--	--	--
	10	973	2061	3503	33	68	66	64	61	53	52	31	24	27	38	35	35	32	28	29	--	--	--
	12	1170	2479	4212	47	72	69	67	64	56	55	34	28	30	40	37	37	34	30	31	--	--	--
400	2	248	524	891	1	43	54	46	46	42	36	--	--	--	22	19	19	-	-	-	--	--	--
	4	495	1049	1783	5	54	58	52	51	45	40	21	--	--	29	26	26	24	19	20	--	--	--
	6	743	1573	2674	11	60	62	57	55	48	43	25	--	23	33	30	30	28	23	24	--	--	--
	8	990	2097	3565	20	65	65	61	58	52	46	29	23	26	36	33	33	31	26	27	--	--	--
	10	1238	2621	4456	32	69	68	65	62	55	50	32	27	29	39	36	36	33	28	29	--	--	--
	12	1490	3157	5364	46	73	71	68	65	58	53	35	30	32	40	37	37	35	30	31	--	--	--



1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards and in accordance with AHRI Standard 880-2011. (NB-units only)
2. Lw in dB/Oct. (re 1pW) are sound power levels for discharge sound and case radiated sound. Figures less than 17 dB are indicated by "-".
3. The discharge sound power levels Lw are measured in free space and including end reflection.
4. The discharge sound pressure levels are determined with values for attenuation according to AHRI 885-2008.
5. The radiated sound pressure levels are determined with values for attenuation according to AHRI 885-2008.
6. dB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "--".
7. ∆ps is static pressure drop across VAV air volume control terminal with damper fully open
8. For non standard applications and/or selections, please contatct our technical staff.

Table 1: Typical sound attenuation values as per AHRI standard 885-2008

Hz	125	250	500	1K	2K	4K
Discharge (dB)	27	29	40	51	53	39
Radiated (dB)	18	19	20	26	31	36

Type NPOAOOO

Sound data ∆ p = 250 Pa

Model	data refering to inlet spigot				min. Δp_s	Δ p = 250 Pa																	
						discharge sound									radiated sound								
						L_w in dB/Oct. (re 1pW)						Lp values			L_w in dB/Oct. (re 1pW)						Lp values		
	velocity	air volume				125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	dB(A)	NC	NR	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	dB(A)	NC	NR
	m/s	l/s	CFM	m^3/h	Pa	dB									dB								
100	2	15	31	53	2	45	48	45	43	40	29	--	--	--	21	-	-	-	-	-	--	--	--
	4	29	62	106	8	51	53	51	48	45	35	--	--	--	28	22	18	-	-	18	--	--	--
	6	44	94	160	17	55	57	54	52	49	40	21	--	--	32	26	22	20	20	22	--	--	--
	8	59	125	213	30	58	60	57	55	53	44	24	--	21	35	29	25	23	23	25	--	--	--
	10	74	156	266	47	60	63	60	57	56	47	27	21	24	38	32	28	25	25	27	--	--	--
	12	89	189	320	68	62	65	63	60	58	50	29	24	26	39	33	29	27	27	29	--	--	--
125	2	23	49	84	2	43	47	46	43	40	33	--	--	--	22	17	-	-	-	-	--	--	--
	4	47	99	168	7	50	53	51	49	45	38	--	--	--	29	24	21	18	-	19	--	--	--
	6	70	149	253	16	54	57	55	53	48	41	21	--	--	33	28	25	22	21	23	--	--	--
	8	94	198	337	28	58	60	58	56	51	45	24	--	21	36	31	28	25	24	26	--	--	--
	10	117	248	421	44	61	63	61	58	54	48	27	21	24	39	34	31	27	26	28	--	--	--
	12	140	297	504	63	63	66	64	61	57	51	30	24	27	40	35	32	29	28	30	--	--	--
160	2	39	82	139	2	42	47	46	44	43	40	--	--	--	24	19	18	-	-	-	--	--	--
	4	78	164	279	7	50	53	52	50	47	43	--	--	--	31	26	25	20	18	20	--	--	--
	6	116	246	418	15	55	57	55	54	50	46	21	--	--	35	30	29	24	22	24	--	--	--
	8	155	328	558	26	59	60	59	57	53	48	24	--	21	38	33	32	27	25	27	--	--	--
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	12	232	492	835	59	65	66	64	62	57	52	30	24	27	42	37	36	31	29	31	--	--	--
200	2	61	129	219	2	43	38	41	39	36	30	--	--	--	25	21	20	-	-	-	--	--	--
	4	122	258	439	6	52	49	50	47	43	37	--	--	--	32	28	27	22	19	21	--	--	--
	6	183	387	658	14	57	55	56	51	47	42	20	--	--	36	32	31	26	23	25	--	--	--
	8	244	516	878	25	61	59	60	55	51	45	24	--	20	39	35	34	29	26	28	--	--	--
	10	305	645	1097	39	64	63	63	58	54	48	28	21	24	41	37	36	31	29	30	--	--	--
	12	367	778	1321	56	67	66	66	60	57	51	31	25	27	43	39	38	33	30	32	--	--	--
250	2	96	203	345	1	44	47	46	44	41	37	--	--	--	25	20	20	-	-	-	--	--	--
	4	192	406	690	6	53	55	54	50	46	42	--	--	--	32	27	27	22	20	21	--	--	--
	6	288	609	1035	13	59	60	59	54	50	46	24	--	21	36	31	31	26	24	25	--	--	--
	8	383	812	1380	23	63	64	62	57	53	48	28	22	25	39	34	34	29	27	28	--	--	--
	10	479	1015	1725	36	66	67	65	60	55	51	31	26	28	41	37	37	31	29	30	--	--	--
	12	575	1218	2070	52	69	70	68	62	57	53	34	29	31	43	38	38	33	31	32	--	--	--
315	2	153	324	550	1	45	50	45	46	45	40	--	--	--	27	24	24	19	-	-	--	--	--
	4	306	648	1101	5	54	56	52	52	50	44	20	--	--	34	31	31	26	22	23	--	--	--
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	8	612	1295	2202	22	65	64	61	59	56	51	28	22	25	41	38	38	33	29	30	--	--	--
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355	2	195	412	701	1	45	57	50	51	47	47	20	--	--	28	25	25	20	-	-	--	--	--
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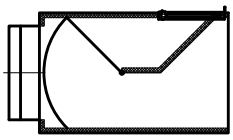
	10	973	2061	3503	33	70	69	66	64	57	56	33	28	30	44	41	41	36	32	33	20	--	--
	12	1170	2479	4212	47	73	71	69	66	59	59	36	30	32	46	43	43	38	33	35	22	--	--
400	2	248	524	891	1	46	59	51	52	49	45	22	--	--	28	25	25	21	-	17	--	--	--
	4	495	1049	1783	5	56	63	57	56	52	47	26	21	24	35	32	32	28	23	24	--	--	--
	6	743	1573	2674	11	62	66	61	59	54	49	29	24	27	39	36	36	32	27	28	--	--	--
	8	990	2097	3565	20	67	68	64	62	57	52	32	27	29	42	39	39	35	30	31	--	--	--
	10	1238	2621	4456	32	71	71	67	65	59	54	35	30	32	45	42	42	37	32	33	21	--	--
	12	1490	3157	5364	46	74	73	70	67	61	57	37	33	34	46	43	43	39	34	35	23	--	--



1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards and in accordance with AHRI Standard 880-2011. (NB-units only)
2. Lw in dB/Oct. (re 1pW) are sound power levels for discharge sound and case radiated sound. Figures less than 17 dB are indicated by "-".
3. The discharge sound power levels Lw are measured in free space and including end reflection.
4. The discharge sound pressure levels are determined with values for attenuation according to AHRI 885-2008.
5. The radiated sound pressure levels are determined with values for attenuation according to AHRI 885-2008.
6. dB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "--".
7. ∆ps is static pressure drop across VAV air volume control terminal with damper fully open
8. For non standard applications and/or selections, please contatct our technical staff.

Table 1: Typical sound attenuation values as per AHRI standard 885-2008

Hz	125	250	500	1K	2K	4K
Discharge (dB)	27	29	40	51	53	39
Radiated (dB)	18	19	20	26	31	36

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