

NC series

**Compact VAV and CAV air volume control terminals** 



Description	Page
Type designation	1
Technical data	
- General	2
- Specification	3
- Installation instruction	3
Model overview / dimensions	4
Sound data NCOA	5 - 6
Sound data NCOC	7 - 8
Sound data NCOG/NCON	9 - 10
Sound data NCOJ/NCOQ	11-12



*Type designation NC.....* 

### **Composition type designation:**

# N - C - O - N - E - O - B



С

 $(\mathbf{O})$ 

### Position 1: Product group

N = air volume control terminals

### Position 2: Function

- A = single wall, circular volume control terminal
- B = double wall, circular volume control terminal
- C = compact type
- 1 = non standard, specify separately

#### Position 3: Controls (manufacturer)

O = without controls For controls, contact our sales staff

#### Position 4: Outlet

- A = rectangular outlet
- B = circular outlet
- C = 4 circular outlets ('Octopus')
- G= rectangular outlet and provision for integral hot water reheat coil
- J = 4 circular outlets and provision for integral hot water reheat coil
- N= rectangular outlet and provision for integral electric reheat coil
- $Q_{=}$  4 circular outlets and provision for integral electric reheat coil
- 1 = non standard, specify separately

## Position 5: Reheat coil

- O = without reheat coil
- A = 1-row hot water reheat
- B = 2-row hot water reheat
- D = 4-row hot water reheat
- 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
- 1 = non standard, specify separately

## 0

### Position 6: Controls (type & function)

O = without controls For controls, contact our sales staff

## Β

## Positon 7: Sensor

- O=not applicable
- B=Flo-cross, 2 x 12 point averaging and signal amplifying air flow sensor (standard)
- 1 =non standard, specify separately

# Ordering example:



#### Ordering information:

#### Standard terminals:

- quantity of terminals
- complete 7 digit code
- terminal size or model
- air volume setting (V<sub>max</sub>, V<sub>min</sub> etc)
- control handing (standard right side)
- if applicable, electric reheat coil capacity
- supply or return air

#### Non standard terminals:

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



air volume control terminals

## Technical data Type (NC.....)



#### Application

Compact type NC terminals are pressure independent and suitable for VAV and CAV applications. They have round inlet and rectangular outlet. The terminals are designed for the accurate measurement and control of air volumes courtesy of the patented Flo-Cross airflow sensor. In CAV application, the terminals maintain the required constant airflow independent of the inlet static pressure.

In VAV application, the terminals control the air volume to the room, depending on the cooling load required thus saving energy in both cooling and heating applications.

The VAV or CAV terminals can be used either for supply or return air applications in new or refurbishment projects. The air terminals can be delivered with an air distribution plenum and a builtin hot water or electric reheat coil.

#### Features:

- Pressure independent control functions.
- Volume control range 100% to 10%.
- Low pressure loss over the terminal.
- Factory fitted air distribution plenum with built-in hot water or electric reheat coil.
- Oval shaped damper blade for linear control characteristics.
- Low leakage damper, less than 1% of Vnom at 750 Pa.
- Low noise level.
- Suitable for all control functions VAV, CAV, shut-off to maximise system energy savings.

- Flo-Cross, 2 x 12 points averaging and signal amplifying airflow sensor, better than 2.5% accuracy even with irregular duct approach.
- Maintenance free.

#### **Technical information**

#### Casing:

Air-tight construction made of galvanized sheet steel with low casing leakage rate.

#### Insulation :

The rectangular discharge section is internally insulated.

#### Damper:

Damper blade: made of steel, sandwich construction with twin blades and a neoprene gasket with low leakage.

Damper shaft: aluminum,12mm diameter with nylon bearings

*Flo-Cross*: Extruded aluminium construction with nylon core and feet.

Distribution plenum: Made of galvanised sheet steel with internal isolation. Plenum with standard rectangular outlet construction or with 1 to 7 circular outlets. Outlet spigots are made of galvanised steel and optionally can be provided with adjustable volume control dampers.

#### Reheat coil:

Choice of 1, 2 or 4-row hot water reheat coil or electric reheat coil (220-240VAC/1-phase or 380-415VAC/3phase).

#### Controls:

Suitable for use with pneumatic, analogue electronic or DDC controllers. Controls can be factory fitted, wired and calibrated. A controls enclosure made from galvanised sheet steel can be provided as an option.

#### **Delivery format:**

Delivery format:

• The VAV or CAV terminal will be supplied as a single mounting assembly.

Optional ordered distribution plenum, reheat coil and/or controls are factory fitted, wired and calibrated. The terminal can be directly installed and commissioned when delivered to site.

- Controls location and hot water or electric connections are as 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.



air volume control terminals

## Technical data Type (NC.....)



#### Specify as:

#### Example:

Supply and install, variable air volume terminals with distribution plenum and 4 circular outlets, constructed from galvanized sheet steel. The casing leakage rate shall be classified according to class II, VDI3803/DIN24194. The VAV terminals shall have oval shaped damper blade with neoprene gasket and an aluminium damper shaft with self lubricating nylon bearings.

Flo-Cross averaging airflow sensor with at least 2x12 test points and amplified signal, type Flo-Cross shall control the airflow with an accuracy better than 2.5%.

The terminals shall be supplied with 1 row hot water reheat coil.

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

Controls must be factory fitted, wired and calibrated according to the following requirements:

Miximum air volume 250 l/s Minimum air volume 60 l/s Minimum air volume 120 l/s (in case of reheat) Terminal inlet size 200 mm diameter Max. pressure loss 38 Pa Max. discharge sound index < NC30 @250Pa Δp Max.radiated sound index< NC30 @250Pa Δp

Ordering example: type - model - handing= NCOJAOB - 200R

Manufacturer: Barcol-Air



#### Installation Instructions

The Barcol-Air VAV terminals shall be installed using at least two support channels, with antivibration rubber under the terminal (as shown in the drawing below). Each of these channels shall be fixed with two threaded rods to the ceiling slab above. Alternatively 4 duct fixing hooks can be provided for suspending the units.

The 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.
- Provides some flexibility to the final location of the VAV terminals.
- 4. Use at least one diameter straight duct length before the VAV inlet.

- 5. Additional manual volume control dampers (VCD' s) should not be installed before the unit inlet.
- 6. All connections shall be thermally isolated.
- Pressure sensing tubes for the Flo-Cross airflow sensor shall not be "kinked" or otherwise obstructed by the external duct insulation.

See drawing below.



NC series base unit

NC series with Hot Water Reheat



#### NC series with Electric Reheat



Technical data: Type (NC.....)







#### **Dimensions NC terminals**

Model	100	125	160	200	250	315	355	400
w	250	250	250	300	350	400	500	550
н	200	200	200	250	300	365	405	450
L	400	400	400	400	400	500	500	500
ΦD	98	123	158	198	248	313	353	398
ΦD1	148	148	148	198	248	248	248	248
L1	1150	1150	1150	1150	1150	1250	1250	1250
L2	600/900	600/900	600/900	600/900	600/900	600/900	600/900	600/900

All dimensions in mm.

- \* = Installed length.
- \*\* = Size varies with a 1-2-row or 4-row hot water reheat coil.

Other dimensions are avaliable upon request.

 ${\sf MOA}\xspace$  can be integrated with basic unit per job requirement.



Sound data  $\Delta p = 125 Pa$ 

data refering to inlet spigot $ \Delta p = 125 Pa$ discharge sound     radiated sound       L <sub>w</sub> in dB/Oct. (re 1pW)     Lp values       L <sub>w</sub> in dB/Oct. (re 1pW)     Lp values																							
		data re	efering	to t					disch	arge	soun	d						radia	ated s	ound			
		Inter	spigo			L	in dl	B/Oc	t. (re	e 1p\	<b>N</b> )	L	p val	ues	L	in d	B/Oc	:t. (re	e 1pV	V)	Lp	valu	es
Model	Velocity	ai	ir volur	ne	min. ∆Ps	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	$d\mathbf{B}(\mathbf{A})$	NC	NR
	m/s	l/s	CFM	m³/h	Ра			D	В								d	В					
	2	15	31	53	2	43	44	40	38	34	22				-	-	-	-	-	-			
100	4	29	62	106	8	49	50	46	44	40	29	24		20	22	-	-	-	-	-			
100	6	44	94	160	17	53	54	51	48	44	34	28	22	24	26	20	-	-	-	18			
	8	59	125	213	30	57	58	54	52	49	39	31	26	28	29	23	19	19	19	21			
	10	74	156	266	47	59	61	58	55	52	43	34	29	31	32	26	22	21	21	23			
	2	23	49	84	2	40	43	40	39	34	25				-	-	-	-	-	-			
125	4	47	99	168	7	47	49	46	45	40	31	23			23	18	-	-	-	-			
125	6	70	149	253	16	52	54	51	49	44	36	27	21	24	27	22	19	18	-	19			
	8	94	198	337	28	56	58	55	53	48	40	31	25	28	30	25	22	21	20	22			
	10	117	248	421	44	59	61	58	56	51	44	34	29	31	33	28	25	23	22	24			
	2	39	82	139	2	39	41	40	38	31	32				18	-	-	-	-	-			
160	4	78	164	279		41	48	46	44	41	36	22			25	20	19	-	-	-			
100	6	116	246	418	15	52	52	50	49	44	39	26		22	29	24	23	20	18	20			
	8	155	328	558	26	56	56	54	52	48	42	30	24	26	32	21	26	23	21	23			
	10	194	410	697	41	60	60	58	56	51	45	34	28	30	34	29	28	25	23	25			
		101	129	219		39	34	37	34	30	23				19	-	-	-	-	-			
200	4	122	258	439	0	48	44	46	42	101	31	20			20	22	21		-	-			
	0	103	507	030	14	54	51	52	51	42	10	20		20	30	20	20	22	20	21			
	10	244	645	1007	20	50	50	50	51	50	40	24	23	20	25	23	20	20	22	24			
	2	305	203	345	1	11	13	42	30	34	30	34	21	30	10	51	- 30	21	20	20			
		102	203	690	6	50	51	4Z	45	40	35	25		20	26	21	21	18		_			
250	6	288	600	1035	13	56	56	50	50	40	30	30	23	20	20	25	25	22	20	21			
	8	383	812	1380	23	60	60	50	53	47	43	34	23	30	33	28	28	25	23	24			
	10	179	1015	1725	36	63	63	62	56	50	45	37	32	34	35	31	31	27	25	24			
	2	153	324	550	1	42	45	41	41	38	33		52		21	18	18	-	-				
	4	306	648	1101	5	52	52	48	47	43	38	26		21	28	25	25	22	18	19			
315	6	459	971	1651	12	58	57	54	52	48	42	31	24	27	32	29	29	26	22	23			
	8	612	1295	2202	22	63	61	58	56	52	46	35	29	31	35	32	32	29	25	26			
	10	764	1619	2752	34	67	64	62	59	55	50	39	34	35	38	34	34	31	27	28			
	2	195	412	701	1	42	52	45	45	40	38	24		21	22	19	19	-	-	-			
	4	389	824	1401	5	53	56	51	50	43	42	29	24	26	29	26	26	23	18	20			
355	6	584	1236	2102	12	59	60	56	54	46	45	33	28	30	33	30	30	27	23	24			
	8	779	1649	2803	21	64	63	60	57	50	48	37	32	33	36	33	33	30	25	27			
	10	973	2061	3503	33	68	66	64	61	53	52	41	36	37	38	35	35	32	28	29			
	2	248	524	891	1	43	54	46	46	42	36	26	21	24	22	19	19	-	-	-			
400	4	495	1049	1783	5	54	58	52	51	45	40	31	26	28	29	26	26	24	19	20			
400	6	743	1573	2674	11	60	62	57	55	48	43	35	30	32	33	30	30	28	23	24			
	8	990	2097	3565	20	65	65	61	58	52	46	39	34	36	36	33	33	31	26	27			
	10	1238	2621	4456	32	69	68	65	62	55	50	42	37	39	39	36	36	33	28	29			
1 Sound d	Iata is d	otormina	ed in a	reverher	ration	6		) NC a	nd NR	indev f	iaures	are sou	und nre	SSUIRA		Tabla	2. In	sortic	n Lo				

Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption. 5. Lp values are including a room absorption of 10

dB/Oct.



levels. Figures less than 20 are indicated by "- -".

7. Δps is static pressure drop across VAV air volume control terminal with damper fully open.
 8. For insertion loss see table 2.

- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	9	10	11	13	15	15	dB
125	8	9	10	12	14	14	dB
160	8	9	10	12	14	14	dB
200	8	8	9	11	13	13	dB
250	7	8	9	11	13	13	dB
315	7	8	9	11	13	13	dB
355	7	8	9	11	13	13	dB
400	7	8	9	11	13	13	dB

## Type NCOA

1.

Π

Sound data  $\Delta p = 250 Pa$ 

		data re	efering	to discharge sound radiated sound																			
		inlet	spigo	t		L <sub>w</sub> in dB/Oct. (re 1pW) Lp values L <sub>w</sub>								المحا		radia		ouna					
_					-	Lw		B/UC	τ. (Γε	e ipv	<b>v</b> )	L	p vali	Jes	Lw	in a	B/UC	τ. (re	e ipv	<b>v</b> )	L	p valu	ies
Model	Velocity	ai	r volur	ne	min. ∆Ps	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
	<u>m/s</u>	1/S	CFM	<u>m<sup>2</sup>/n</u>	Pa	45	40	dl	<b>B</b>	40	20	01			04		α	в					
100	2 4 6 8 10	15 29 44 59 74	62 94 125 156	106 160 213 266	2 8 17 30 47	45 51 55 58 60	40 53 57 60 63	45 51 54 57 60	43 48 52 55 57	40 45 49 53 56	29 35 40 44 47	27 31 34 36	20 25 28 32	23 27 31 33	28 32 35 38	22 26 29 32	- 18 22 25 28	- 20 23 25	- 20 23 25	- 18 22 25 27			
	2	23	49	84	2	43	47	46	43	40	33	20			22	17	-	-	-	-			
125	4 6 8 10	47 70 94 117	99 149 198 248	168 253 337 421	7 16 28 44	50 54 58 61	53 57 60 63	51 55 58 61	49 53 56 58	45 48 51 54	38 41 45 48	26 30 34 37	20 25 29 32	23 27 31 34	29 33 36 39	24 28 31 34	21 25 28 31	18 22 25 27	- 21 24 26	19 23 26 28	  		
	2	39	82	139	2	42	47	46	44	43	40	20			24	19	18	-	-	-			
	4	78	164	279	7	50	53	52	50	47	43	26	20	23	31	26	25	20	18	20			
160	6	116	246	418	15	55	57	55	54	50	46	31	24	27	35	30	29	24	22	24			
	8	155	328	558	26	59	60	59	57	53	48	34	28	30	38	33	32	27	25	27			
	10	194	410	697	41	62	63	61	59	55	50	37	32	33	40	35	34	29	27	29			
	2	61	129	219	2	43	38	41	39	36	30				25	21	20	-	-	-			
200	4	122	258	439	6	52	49	50	47	43	37	24			32	28	27	22	19	21			
200	6	183	387	658	14	57	55	56	51	47	42	30	22	24	36	32	31	26	23	25			
	8	244	516	878	25	61	59	60	55	51	45	34	27	29	39	35	34	29	26	28			
	10	305	645	1097	39	64	63	63	58	54	48	38	31	33	41	37	36	31	29	30			
	2	96	203	345	1	44	47	46	44	41	37	21			25	20	20	-	-	-			
250	4	192	406	690	6	53	55	54	50	46	42	29	23	25	32	27	27	22	20	21			
200	6	288	609	1035	13	59	60	59	54	50	46	34	28	31	36	31	31	26	24	25			
	8	383	812	1380	23	63	64	62	57	53	48	38	33	35	39	34	34	29	27	28			
	10	479	1015	1725	36	66	67	65	60	55	51	41	36	38	41	37	37	31	29	30			
	2	153	324	550	1	45	50	45	46	45	40	23		20	27	24	24	19	-	-			
315	4	306	648	1101	5	54	56	52	52	50	44	30	24	26	34	31	31	26	22	23			
	6	459	971	1651	12	60	60	57	56	53	48	34	28	31	38	35	35	30	26	27			
	8	612	1295	2202	22	65	64	61	59	50	51	38	33	34	41	38	38	33	29	30			
	10	104	1019	701	34	09	57	50	51	17	34	41	30	27	44	25	25	30	51	32	22		
		190	924	1401	5	45	61	50	55	50	47	29	24	21	20	20	20	20	-	-			
355	6	509	1226	2102	12	61	64	60	58	52	49 51	37	29	31	20	36	36	21	22	24			
		770	1640	2803	21	66	66	63	61	55	51	10	35	37	12	30	30	31	20	20	20		
	10	973	2061	3503	33	70	69	66	64	57	56	43	38	30	42	41	41	36	32	33	23		
	2	248	524	891	1	46	59	51	52	49	45	31	27	29	28	25	25	21	-	17			
400	4	495	1049	1783	5	56	63	57	56	52	47	35	31	33	35	32	32	28	23	24			
400	6	743	1573	2674	11	62	66	61	59	54	49	39	35	36	39	36	36	32	27	28			
	8	990	2097	3565	20	67	68	64	62	57	52	42	38	39	42	39	39	35	30	31	21		
	10	1238	2621	4456	32	71	71	67	65	59	54	45	41	42	45	42	42	37	32	33	23		
												•									•		

 Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

 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 "-".

Figures less than 17 dB are indicated by "-". 3. The discharge sound pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

 The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

**BARCOL-AIR** 

5. Lp values are including a room absorption of 10 dB/Oct.

- 6. DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "--".
- 7. Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	9	10	11	13	15	15	dB
125	8	9	10	12	14	14	dB
160	8	9	10	12	14	14	dB
200	8	8	9	11	13	13	dB
250	7	8	9	11	13	13	dB
315	7	8	9	11	13	13	dB
355	7	8	9	11	13	13	dB
400	7	8	9	11	13	13	dB

## Type NCOA



Sound data  $\Delta p = 125 Pa$ 

		data r	oforing	n to									∆p	= 12	5 Pa								
		inle	tspige	ot				_ / _	disc	harge	sou	nd						radia	ated s	sound			
						L	in dl	3∕Oc	t. (re	e 1pV	<b>V</b> )	l	∟p val	ues	L	in d	B∕Oc	t. (re	9 1pV	<b>V</b> )	L	p val	ues
Model	Kelocity	a	ir volu	me	min. ∆Ps	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR
	<u>m/s</u>	1/5	21	53	2 Fa	3/	32	22	<b>5</b> 18	_	_				_	_	u	D	_	_			
100	4 6 8 10	29 44 59 74	62 94 125 156	106 160 213 266	10 22 38 60	40 44 48 50	38 43 46 49	28 33 36 40	24 28 32 35	18 22 27 30	- - - 19	 20 23			22 26 29 32	- 20 23 26	- - 19 22	- - 19 21	- - 19 21	- 18 21 23			  
	2	23	49	84	2	31	31	22	19	-	-				-	-	-	-	-	-			
125	4 6 8 10	47 70 94 117	99 149 198 248	168 253 337 421	7 17 30 46	38 43 47 50	37 42 46 49	28 33 37 41	25 29 33 36	18 22 26 29	- - - 20	 20 23	   	  	23 27 30 33	18 22 25 28	- 19 22 25	- 18 21 23	- - 20 22	- 19 22 24		  	  
	2	39	82	139	2	30	29	22	18	-	-				18	-	-	-	-	-			
160	4 6 8	78 116 155	164 246 328	279 418 558	6 14 26	38 43 47	36 40 44	28 32 36	24 29 32	19 22 26	- - 18 21	  			25 29 32	20 24 27	19 23 26	- 20 23	- 18 21	- 20 23 25	 	 	 
	10	61	410	210	40	20	40	40	30	29	21	23			10	29	20	20	23	25			
200	2 4 6 8	122 183 244	258 387 516	439 658 878	6 13 23	39 45 49	32 39 43	19 28 34 38	22 27 31	- 20 24					26 30 33	22 26 29	- 21 25 28	18 22 25	- 20 22	- 21 24			
	10	305	645	1097	36	52	47	42	34	28	19	23			35	31	30	27	25	26			
250	2 4 6 8 10	96 192 288 383 479	203 406 609 812 1015	345 690 1035 1380 1725	1 5 11 19 30	32 41 47 51 54	31 39 44 48 51	24 32 37 41 44	19 25 30 33 36	- 18 22 25 28	- - 19 21	  23 26		  21	19 26 30 33 35	- 21 25 28 31	- 21 25 28 31	- 18 22 25 27	- 20 23 25	- 21 24 26			  
	2	153	324	550	1	36	37	23	21	-	-				21	18	18	-	-	-			
315	4 6 8	306 459 612	648 971 1295	1101 1651 2202	5 11 19	46 52 57	44 49 53	30 36 40	27 32 36	21 26 30	- 18 22	 24 28	  21	 23	28 32 35	25 29 32	25 29 32	22 26 29	18 22 25	19 23 26	 	 	
	10	105	1619	2752	29	61	56	44	39	33	26	32	26	28	38	34	34	31	27	28			
355	2 4 6 8	195 389 584 779	412 824 1236 1649	701 1401 2102 2803	1 4 10 18	36 47 53 58	44 48 52 55	27 33 38 42	25 30 34 37	18 21 24 28	- 18 21 24	21 26 30	  22	 21 25	22 29 33 36	19 26 30 33	19 26 30 33	- 23 27 30	- 18 23 25	- 20 24 27			  
	10	973	2061	3503	28	62	58	46	41	31	28	33	28	29	38	35	35	32	28	29			
400	24	248 495	524 1049	891 1783	1 4	37 48	46 50	28 34	26 31	20 23	-	23		20	22 29	19 26	19 26	- 24	- 19	- 20			
	6 8 10	743 990 1238	1573 2097 2621	2674 3565 4456	9 17 26	54 59 63	54 57 60	39 43 47	35 38 42	26 30 33	19 22 26	27 31 35	21 24 29	24 27 30	33 36 39	30 33 36	30 33 36	28 31 33	23 26 28	24 27 29			
				_											1	Table	2: Ir	nsertio	on Lo	ss			

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

**BARCOL-AIR** 

5. Lp values are including a room absorption of 10 dB/Oct.

- 6. DB(A), NC and NR index figures are sound pressure
- Ievels. Figures less than 20 are indicated by "--"
   Λρs is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

able	2:	Insertion	Loss

Model	125	250	500	1K	2K	4K	Hz
100	13	17	23	26	28	30	dB
125	12	15	22	25	27	29	dB
160	12	15	22	25	27	29	dB
200	11	15	21	24	26	28	dB
250	11	15	21	24	26	28	dB
315	8	11	21	24	26	26	dB
355	8	11	21	24	26	26	dB
400	8	11	21	24	26	26	dB

## Type NCOC



Sound data  $\Delta p = 250 Pa$ 

		data r	eferino	to									∆p	= 250	Ра								
		inle	t spiao	t				- / -	disc	narge	sour	nd						radia	ated s	ound			
						L	in dl	B/Oc	t. (re	e 1pV	<b>V</b> )	L	p val	ues	L	in d	B∕Oc	t. (re	e 1p\	<b>V</b> )	L	p valı	les
Model	3 Velocity	ai	ir volui	me	min. ∆Ps Pa	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR
	2	15	31	53	2	36	36	27	23	18	-				21	-		-	_	_			
100	4 6 8 10	29 44 59 74	62 94 125 156	106 160 213 266	10 22 38 60	42 46 49 51	41 45 48 51	33 36 39 42	28 32 35 37	23 27 31 34	- - 20 23	  22 25		  21	28 32 35 38	22 26 29 32	18 22 25 28	- 20 23 25	- 20 23 25	18 22 25 27		  	  
	2	23	49	84	2	34	35	28	23	18	-				22	17	-	-	-	-			
125	4 6 8 10	47 70 94 117	99 149 198 248	168 253 337 421	7 17 30 46	41 45 49 52	41 45 48 51	33 37 40 43	29 33 36 38	23 26 29 32	- 17 21 24	 22 25		   21	29 33 36 39	24 28 31 34	21 25 28 31	18 22 25 27	- 21 24 26	19 23 26 28		  	
	2	39	82	139	2	33	35	28	24	21	-				24	19	18	-	-	-			
160	4 6 8	78 116 155	164 246 328	279 418 558	6 14 26	41 46 50	41 45 48	34 37 41	30 34 37	25 28 31	19 22 24	  22			31 35 38	26 30 33	25 29 32	20 24 27	18 22 25	20 24 27	  	  	 
	10	194	410	697	40	53	51	43	39	33	26	25		21	40	35	34	29	27	29			
200	2 4 6 8	61 122 183 244 305	129 258 387 516	219 439 658 878	1 6 13 23	34 43 48 52 55	26 37 43 47 51	23 32 38 42	19 27 31 35 38	- 21 25 29 32	- - 18 21	  23		   21	25 32 36 39	21 28 32 35 37	20 27 31 34	- 22 26 29 31	- 19 23 26 20	- 21 25 28 30		  	  
	2	305	203	345	30	35	35	28	24	10	24	21		21	4 I 25	20	20	51	29	30			
250	2 4 6 8	192 288 383 479	406 609 812	690 1035 1380	5 11 19 30	50 44 50 54 57	43 48 52 55	20 36 41 44 47	30 34 37 40	19 24 28 31 33	- 18 22 24 27	 22 26 29		  22 25	23 32 36 39 41	20 27 31 34 37	20 27 31 34 37	22 26 29 31	- 20 24 27 29	21 25 28 30			
	2	153	324	550	1	39	42	27	26	23	-				27	24	24	19	-	-			
315	4 6 8	306 459 612	648 971 1295	1101 1651 2202	5 11 19	48 54 59	48 52 56	34 39 43	32 36 39	28 31 34	20 24 27 20	22 27 31	 23	 22 26	34 38 41	31 35 38	31 35 38	26 30 33	22 26 29	23 27 30	  	 	 
	2	195	412	701	1	30	40	32	31	25	23	21	20	23	28	25	25	20	51	52			
355	4 6 8	389 584 779	824 1236	1401 2102 2803	4 10 18	49 55 60	53 56 58	38 42 45	35 38 41	28 30 33	25 25 27 30	25 29 32	20 23 26	23 26 28	35 39	32 36 39	32 36 39	20 27 31 34	22 26 29	24 28 31	  20		
	10	973	2061	3503	28	64	61	48	41	35	32	35	30	31	42	41	41	36	32	33	23		
	2	248	524	891	1	40	51	33	32	27	21	23		21	28	25	25	21	-	17			
400	4	495 743	1049 1573	1783 2674	4	50 56	55 58	39 43	36 39	30 32	23 25	27	22 25	25 28	35 39	32 36	32 36	28 32	23 27	24 28			
	8 10	990 1238	2097 2621	3565 4456	17 26	61 65	60 63	46 49	42 45	35 37	28 30	34 37	28 31	31 33	42 45	39 42	39 42	35 37	30 32	31 33	21 23		
																Table	2: Ir	nsertio	on Lo	ss			

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

**BARCOL-AIR** 

5. Lp values are including a room absorption of 10 dB/Oct.

- 6. DB(A), NC and NR index figures are sound pressure
- Ievels. Figures less than 20 are indicated by "--"
   Λρs is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

ab	le	2:	Insertion	Loss

Model	125	250	500	1K	2K	4K	Hz
100	13	17	23	26	28	30	dB
125	12	15	22	25	27	29	dB
160	12	15	22	25	27	29	dB
200	11	15	21	24	26	28	dB
250	11	15	21	24	26	28	dB
315	8	11	21	24	26	26	dB
355	8	11	21	24	26	26	dB
400	8	11	21	24	26	26	dB

## Type NCOC



### Type NCOG NCON

air volume control terminals

Sound data  $\Delta p = 125 Pa$ 

													∆p∶	= 125	Ра								
		data re	efering	to t					disc	harge	sour	۱d						radia	ated s	ound			
		inner	spigo			L	in dl	B/Oc	t. (re	e 1p\	V)	L	p val	ues	L	in d	<b>B/O</b>	ct. (r	e 1p	<b>W</b> )	L	p valı	les
Model	Velocity	ai	ir volur	ne	min. ∆Ps	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000	$dB\left( \boldsymbol{A}\right)$	NC	NR
	m/s	l/s	CFM	m³/h	Ра			dl	B			1					d	В					
	2	15	31	53	3	38	27	28	26	21	-				-	-	-	-	-	-			
	4	29	62	106	11	44	43	34	31	27	-				22	-	-	-	-	-			
100	6	44	94	160	24	48	47	38	35	32	20	21			26	20	-	-	-	18			
	8	59	125	213	43	51	50	41	38	35	24	24			29	23	19	19	19	21			
	10	74	156	266	67	53	53	44	42	39	28	26		22	32	26	22	21	21	23			
	2	23	49	84	3	35	35	28	27	22	-				-	-	-	-	-	-			
	4	47	99	168	10	42	42	34	32	27	-				23	18	-	-	-	-			
125	6	70	149	253	23	46	46	38	36	31	21	20			27	22	19	18	-	19			
	8	94	198	337	40	50	50	42	40	35	25	23			30	25	22	21	20	22			
	10	117	248	421	63	53	53	45	43	38	29	26		22	33	28	25	23	22	24			
	2	39	82	139	2	34	34	28	26	24	18				18	-	-	-	-	-			
	4	78	164	279	9	41	40	33	32	28	21				25	20	19	-	-	-			
160	6	116	246	418	21	46	45	37	36	32	24				29	24	23	20	18	20			
	8	155	328	558	38	50	48	41	39	35	27	22			32	27	26	23	21	23			
	10	194	410	697	59	53	51	44	42	37	30	26		21	34	29	28	25	23	25			
	2	61	129	219	2	34	27	25	22	18	-				19	-	-	-	-	-			
	4	122	258	439	9	43	37	34	30	25	_				26	22	21	18	_	_			
200	6	183	387	658	21	48	43	39	34	29	21				30	26	25	22	20	21			
	8	244	516	878	38	52	47	43	38	33	24	23			33	29	28	25	22	24			
	10	305	645	1097	59	55	51	46	40	36	27	26		20	35	31	30	27	25	26			
	2	96	203	345	2	36	36	29	27	22	_				19	-	-	-	-	-			
	4	192	406	690	9	44	43	37	33	28	21				26	21	21	18	-	-			
250	6	288	609	1035	21	50	48	42	37	31	24	22			30	25	25	22	20	21			
	8	383	812	1380	38	53	52	45	40	34	27	26		21	33	28	28	25	23	24			
	10	479	1015	1725	59	57	55	48	42	37	30	29	22	25	35	31	31	27	25	26			
	2	153	324	550	2	40	42	29	29	26	18				21	18	18	-	-	-			
	4	306	648	1101	9	49	48	36	34	31	23	22			28	25	25	22	18	19			
315	6	459	971	1651	21	55	53	41	39	35	27	27		22	32	29	29	26	22	23			
	8	612	1295	2202	38	60	57	45	43	39	31	31	25	27	35	32	32	29	25	26			
	10	764	1619	2752	59	64	60	48	46	42	34	35	30	31	38	34	34	31	27	28			
	2	195	412	701	2	40	49	33	33	27	24	20			22	19	19	-	-	-			
	4	389	824	1401	9	50	53	39	37	31	27	25		22	29	26	26	23	18	20			
355	6	584	1236	2102	21	56	56	43	41	34	30	29	23	26	33	30	30	27	23	24			
		770	1649	2803	38	61	59	47	44	37	33	33	27	29	36	33	33	30	25	27			
	10	973	2061	3503	59	65	62	50	47	40	36	37	31	32	38	35	35	32	28	29			
	2	248	524	801	2	<u>41</u>	51	34	34	29	22	22	51	20	22	19	19	52	20	23			
		105	10/0	1783	á	51	55	10	38	33	25	27	22	25	20	26	26	24	10	20			
400	6	7/2	1572	2674	21	57	58	40	42	36	20	21	26	20	23	30	30	24	23	20			
		000	2007	3565	20	62	61	44	42	30	20	35	20	20	35	33	33	20	20	24			
	10	1220	2097	1450	50	66	61	40	40	12	24	20	29	24	20	36	26	22	20	21			
		1200	2021	4400	59	00	04	01	1 -0	74	04	00	55	104	22	00	50	55	20	29			

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

5. Lp values are including a room absorption of 10 dB/Oct.

- 6. DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "- -'
- Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	9	10	11	13	15	15	dB
125	8	9	10	12	14	14	dB
160	8	9	10	12	14	14	dB
200	8	8	9	11	13	13	dB
250	7	8	9	11	13	13	dB
315	7	8	9	11	13	13	dB
355	7	8	9	11	13	13	dB
400	7	8	9	11	13	13	dB



38

59

2

9

57

60 59 52 47 42 36 33 27 29 41 37 37

43 47 34 35 33 26 20

52 53 40

56 49 45

## Sound data $\Delta p = 250$

Model

100

125

160

200

250

8

10

2

4

383

479

153

306

812

1015

324

648

1380

1725

550

1101

0 001111011	01111	ma									п—Г		Π	п-		
∆р = 250 Ра											Щ	0	-	Ц_		
									∆р	= 250	Ра					
data refering to					discl	narge	sour	d						radia	ited s	ound
met spigot		L, i	in dE	3/Oc	t. (re	e 1pV	N)	L	p val	ues	L,	in d	B/O	ct. (r	e 1p\	N)
	min.															

30 23

> - -- -

26

39 34 34 29

27 24 24 19

34 31 31 26 22

40

40 37 30 26 20 23

34

Velocity	ai	r volur	ne	∆Ps	125 Hz	250 Hz	500 Hz	1000	2000	4000	$d\boldsymbol{B}\left(\boldsymbol{A}\right)$	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000
m/s	1/s	CEM	m <sup>3</sup> /h	Ра			lb	B								d	B		
 2	15	31	53	3	40	41	34	31	28	-				21	-	-	_	-	-
4	29	62	106	11	46	46	39	36	33	21	20			28	22	18	-	-	18
6	44	94	160	24	50	50	42	39	37	25	23			32	26	22	20	20	22
8	59	125	213	43	52	53	45	42	40	29	26		22	35	29	25	23	23	25
10	74	156	266	67	54	55	47	44	43	32	28	22	25	38	32	28	25	25	27
2	23	49	84	3	38	40	34	32	28	19				22	17	-	-	-	-
4	47	99	168	10	45	46	39	37	33	24				29	24	21	18	-	19
6	70	149	253	23	49	50	43	40	36	27	23			33	28	25	22	21	23
8	94	198	337	40	52	53	46	43	39	30	26		22	36	31	28	25	24	26
10	117	248	421	63	55	55	48	45	41	33	29	23	25	39	34	31	27	26	28
2	39	82	139	2	38	40	34	32	32	26				24	19	18	-	-	-
4	78	164	279	9	45	46	40	38	35	29				31	26	25	20	18	20
6	116	246	418	21	50	49	43	41	38	31	23			35	30	29	24	22	24
8	155	328	558	38	53	52	46	44	40	33	26		22	38	33	32	27	25	27
10	194	410	697	59	56	55	48	46	42	35	29	22	25	40	35	34	29	27	29
2	61	129	219	2	39	32	29	27	24	-				25	21	20	-	-	-
4	122	258	439	9	47	41	38	35	31	23				32	28	27	22	19	21
6	183	387	658	21	52	47	43	39	35	27	23			36	32	31	26	23	25
8	244	516	878	38	55	51	47	42	38	30	27		21	39	35	34	29	26	28
10	305	645	1097	59	58	54	50	44	41	33	30	22	24	41	37	36	31	29	30
2	96	203	345	2	40	41	34	32	29	23				25	20	20	-	-	-
4	192	406	690	9	48	48	42	38	34	28	22			32	27	27	22	20	21
6	288	609	1035	21	53	53	46	42	37	31	27	20	23	36	31	31	26	24	25

315	6	459	971	1651	21	58	57	45	43	40	33	31	24	27	38	35	35
	8	612	1295	2202	38	62	60	48	46	43	36	34	28	30	41	38	38
	10	764	1619	2752	59	66	63	51	49	46	39	37	32	33	44	40	40
	2	195	412	701	2	43	54	38	39	35	33	26	21	24	28	25	25
255	4	389	824	1401	9	53	58	44	43	38	35	30	25	28	35	32	32
335	6	584	1236	2102	21	59	60	48	46	40	37	33	28	31	39	36	36
	8	779	1649	2803	38	63	63	51	48	42	39	36	31	33	42	39	39
	10	973	2061	3503	59	67	65	53	51	44	41	39	34	35	44	41	41
	2	248	524	891	2	44	56	39	40	37	31	28	24	26	28	25	25
400	4	495	1049	1783	9	54	60	45	44	40	33	32	28	30	35	32	32
100	6	743	1573	2674	21	60	62	49	47	42	35	35	31	33	39	36	36
	8	990	2097	3565	38	64	65	52	49	44	37	38	33	35	42	39	39
	10	1238	2621	4456	59	68	67	54	52	46	39	41	36	37	45	42	42

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

5. Lp values are including a room absorption of 10

- dB/Oct. 6. DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "---
- 7.  $\Delta ps$  is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	9	10	11	13	15	15	dB
125	8	9	10	12	14	14	dB
160	8	9	10	12	14	14	dB
200	8	8	9	11	13	13	dB
250	7	8	9	11	13	13	dB
315	7	8	9	11	13	13	dB
355	7	8	9	11	13	13	dB
400	7	8	9	11	13	13	dB

## Type NCOG NCON

ļ

Lp values

NO

NR

- -- -

- -

- -

- -

- -- -

- -

- -

- -

- -

- -

- -- -

- -

- -

- -

- -

- -

- -- -

- -

- -- -

- -

- -

- -

- -- -

₹

ğ

- -

- -- -

- -- -- -

- -- -

- -- -

- -- -- -

- -- -- -

- -- -- -

- -

- -

- -- -- -

- -- -

- -- -- -- -

- -- -

- -- -- -- -

- -- -- -

- -- -- -

- -- -

- -

- -

- -- -

- -- -- -

- -- -

- -

- -- -

- -- -

- -- -

- -- -

27

31 29 30

30 26 27 - -

33 29 30

35 31 32 22

20

27 22 24 - -- -- -

31 26 28 - -- -- -

34 29 31 20 - -- -

36 32 33 23

21

28 23 24 - -- -- -

32 27 28 - -

35 30 31 21 - -- -

37 32 33 23

28

23

17



## Type NCOJ NCOQ

4

Π.

Sound data  $\Lambda p = 125 Pa$ 

		•											۸n	= 125	Pa								
		data r	efering	g to					disc	harge	sou	nd		- 123	1 4			radi	ateds	sound	ł		
		inle	tspigo	ot		L,	in dl	B/Oc	t. (re	⇒ 1pV	V)	L	_p val	ues	L	in dl	B/Oc	t. (re	e 1p\	N)	L	p val	ues
Model	Velocity	a	ir volu	me	min. ∆ Ps	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR
	m/s	l/s	CFM	m³/h	Ра			dl	3								D	В					
100	2 4 6 8 10	15 29 44 59 74	31 62 94 125 156	53 106 160 213 266	3 11 24 43 67	32 38 42 45 47	30 36 40 43 46	20 26 30 33 36	- 21 25 28 32	- 20 23 27	- - - -	  20			- 22 26 29 32	- 20 23 26	- - - 19 22	- - 19 21	- - - 19 21	- - 18 21 23		  	
	2	23	49	84	3	29	28	20	-	-	-				-	-	-	-	-	-			
40.7	4	47	99	168	10	36	35	26	22	-	-				23	18	-	-	-	-			
125	6	70	149	253	23	40	39	30	26	19	-				27	22	19	18	-	19			
	8	94	198	337	40	44	43	34	30	23	-				30	25	22	21	20	22			
	10	30	248	421	2	47	40	37	33	20	-	20			33	28	25	23	22	24			
		78	164	279	9	35	33	25	22						25	20	19						
160	6	116	246	418	21	40	38	29	26	20	-				29	24	23	20	18	20			
	8	155	328	558	38	44	41	33	29	23	-				32	27	26	23	21	23			
	10	194	410	697	59	47	44	36	32	25	18				34	29	28	25	23	25			
	2	61	129	219	2	28	20	-	-	-	-				19	-	-	-	-	-			
200	4	122	258	439	9	37	30	26	20	-	-				26	22	21	18	-	-			
	6	183	387	658	21	42	36	31	24	17	-				30	26	25	22	20	21			
	8	244	516	878	38	46	40	35	28	21	-				33	29	28	25	22	24			
	10	305	645	1097	59	49	44	38	30	24	-	20			35	31	30	27	25	26			
		102	203	345 600		30	29	21	-	-	-				19	-	21	10	-	-			
250	6	288	609	1035	21	44	41	34	23	19					30	25	25	22	20	21			
	8	383	812	1380	38	47	45	37	30	22	-				33	28	28	25	23	24			
	10	479	1015	1725	59	51	48	40	32	25	18	22			35	31	31	27	25	26			
	2	153	324	550	2	34	35	21	19	-	-				21	18	18	-	-	-			
215	4	306	648	1101	9	43	41	28	24	19	-				28	25	25	22	18	19			
515	6	459	971	1651	21	49	46	33	29	23	-	21			32	29	29	26	22	23			
	8	612	1295	2202	38	54	50	37	33	27	19	25		20	35	32	32	29	25	26			
	10	764	1619	2752	59	58	53	40	36	30	22	29	22	24	38	34	34	31	27	28			
	2	195	412	701	2	34	42	25	23	-	-				22	19	19	-	-	-			
355	4	389	824	1401	9	44	46	31	27	19	-				29	26	26	23	18	20			
	0	584	1230	2102	21	50	49	35	31	22	18	23			33	30	30	21	23	24			
	10	973	2061	2503	59	59	52	42	37	20	21	30	23	22	38	35	35	32	20	29			
	2	248	524	891	2	35	44	26	24	17	-				22	19	19	-	-	-			
400	4	495	1049	1783	9	45	48	32	28	21	-	20			29	26	26	24	19	20			
400	6	743	1573	2674	21	51	51	36	32	24	-	24		21	33	30	30	28	23	24			
	8	990	2097	3565	38	56	54	40	35	27	19	28	21	24	36	33	33	31	26	27			
	10	1238	2621	4456	59	60	57	43	38	30	22	32	25	27	39	36	36	33	28	29			

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

5. Lp values are including a room absorption of 10 dB/Oct.

6. DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "- -"

Δps is static pressure drop across VAV air volume control terminal with damper fully open.

8. For insertion loss see table 2.

9.For non standard applications and/or selections, please contact our technical staff.

Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	13	17	23	26	28	30	dB
125	12	15	22	25	27	29	dB
160	12	15	22	25	27	29	dB
200	11	15	21	24	26	28	dB
250	11	15	21	24	26	28	dB
315	8	11	21	24	26	26	dB
355	8	11	21	24	26	26	dB
400	8	11	21	24	26	26	dB



## Type NCOJ NCOQ

4

loon

۰

.

air volume control terminals

Sound data  $\Delta p = 250 Pa$ 

						∆p = 250 Pa																	
		data re inlef	etering t spigo	ito t					disc	narge	sour	nd						radia	ated s	ound			
				<u> </u>		L	in dl	<u>∃/Oc</u>	t. (re	e 1pV	<b>V</b> )	L	p val	ues	L	in dl	B∕Oc	:t. (re	e 1pV	<b>V</b> )	L	p valı	les
Model	Velocity	ai	ir volur	ne	min. ∆Ps	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB(A)	NC	NR	125 Hz	250 Hz	500 Hz	1000	2000	4000	dB (A)	NC	NR
	m/s	I/s	CFM	m³/h	Pa			dl	3		1						d	B					
100	2 4 6 8 10	15 29 44 59 74	31 62 94 125 156	53 106 160 213 266	3 11 24 43 67	34 40 44 46 48	34 39 43 46 48	26 31 34 37 39	21 26 29 32 34	- 21 25 28 31	- - - 20	  22			21 28 32 35 38	- 22 26 29 32	- 18 22 25 28	- 20 23 25	- 20 23 25	- 18 22 25 27	  	  	
	2	23	49	84	3	32	33	26	22	-	-				22	17	-	-	-	-			
	4	47	99	168	10	39	39	31	27	21	-				29	24	21	18	-	19			
125	6	70	149	253	23	43	43	35	30	24	-				33	28	25	22	21	23			
	8	94	198	337	40	46	46	38	33	27	18				36	31	28	25	24	26			
	10	117	248	421	63	49	48	40	35	29	21	22			39	34	31	27	26	28			
	2	39	82	139	2	32	33	26	22	20	-				24	19	18	-	-	-			
160		/8	164	279	9	39	39	32	28	23	17				31	26	25	20	18	20			
100		110	240	418	21	44	42	35	21	20	19	20			35	22	29	24	22	24			
		100	320	607	50	47	45	38	36	20	21	20			30	35	34	21	25	21			
	2	61	129	219	2	33	25	21	17	-	-				25	21	20	-	-	-			
	4	122	258	439	9	41	34	30	25	19	-				32	28	27	22	19	21			
200	6	183	387	658	21	46	40	35	29	23	-				36	32	31	26	23	25			
	8	244	516	878	38	49	44	39	32	26	18	20			39	35	34	29	26	28			
	10	305	645	1097	59	52	47	42	34	29	21	23			41	37	36	31	29	30			
	2	96	203	345	2	34	34	26	22	-	-				25	20	20	-	-	-			
250	4	192	406	690	9	42	41	34	28	22	-				32	27	27	22	20	21			
	6	288	609	1035	21	47	46	38	32	25	19	20			36	31	31	26	24	25			
	8	383	812	1380	38	51	49	41	35	28	22	23			39	34	34	29	27	28			
	10	4/9	1015	1725	59	54	52	44	37	30	24	26		21	41	31	31	31	29	30			
		306	6/8	1101	2	16	40	20	30	25	-	20			21	24	24	26	22	-			
315	6	459	971	1651	21	52	50	37	33	28	21	20			38	35	35	30	26	23			
	8	612	1295	2202	38	56	53	40	36	31	24	28	20	23	41	38	38	33	29	30			
	10	764	1619	2752	59	60	56	43	39	34	27	31	24	26	44	40	40	35	31	32	22		
	2	195	412	701	2	37	47	30	29	23	21				28	25	25	20	-	-			
255	4	389	824	1401	9	47	51	36	33	26	23	23		20	35	32	32	27	22	24			
300	6	584	1236	2102	21	53	53	40	36	28	25	27	20	23	39	36	36	31	26	28			
	8	779	1649	2803	38	57	56	43	38	30	27	30	23	26	42	39	39	34	29	31	20		
	10	973	2061	3503	59	61	58	45	41	32	29	33	26	28	44	41	41	36	32	33	23		
	2	248	524	891	2	38	49	31	30	25	19	21			28	25	25	21	-	17			
400		495	1049	1783	9	48	53	37	34	28	21	25		23	35	32	32	28	23	24			
	0	743	15/3	20/4	21	54	55	41	30	30	23	20	21	25	39	30	30	32	21	28	21		
		1239	2097	1456	50	62	60	44	42	34	20	31	21	20	42	12	42	37	30	33	21		
		1230	2021	4400	59	02	00	40	42	54	21	34	20	30	45	42	42	31	32	33	23		

Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO3741 and ISO 5135 standards.

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 pressure levels are determined with the assumptions as mentioned in table 1 for downstream ductwork including a diffuser with insulated plenum box.

4. The radiated sound pressure levels are determined with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.

5. Lp values are including a room absorption of 10 dB/Oct.

6. DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "- -'

- Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- 8. For insertion loss see table 2.
- 9.For non standard applications and/or selections, please contact our technical staff.

#### Table 1 : Assumptions for additional attenuation

Hz	125	250	500	1K	2K	4K
Discharge (dB)	5	10	20	30	30	25
Radiated (dB)	2	5	10	15	15	20

Table 2: Insertion Loss

Model	125	250	500	1K	2K	4K	Hz
100	13	17	23	26	28	30	dB
125	12	15	22	25	27	29	dB
160	12	15	22	25	27	29	dB
200	11	15	21	24	26	28	dB
250	11	15	21	24	26	28	dB
315	8	11	21	24	26	26	dB
355	8	11	21	24	26	26	dB
400	8	11	21	24	26	26	dB





Website: www.barcolair.net