

**NA / NB series**

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

**BARCOL-AIR**

# Circular VAV and CAV air volume control terminals

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# Circular VAV and CAV air volume control terminals

Type designation  
NA / NB.....

## Composition type designation:

**N - B - O - O - N - E - B**

### **N** Position 1: **Product group**

N = air volume control terminals

### **B** Position 2: **Function**

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

### **O** Position 3: **Leakage rate**

O = low leakage rate VAV terminal  
S = Very low leakage rate VAV terminal

### **O** Position 4: **Controls (manufacturer)**

O = without controls  
B = Belimo  
S = Siemens  
J = Johnson  
H = Honeywell  
D = Schneider

### **N** Position 5: **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

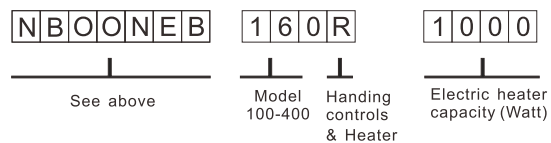
### **E** Position 6: **Reheat coil**

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

### **B** Position 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 codes "Specials"

N..1... - 3010 = 4 balancing dampers in 'Octopus' outlet  
N..1... - 3006 = 'Octopus' with 6 outlets instead of 4  
N..1... - 3016 = 'Octopus' with 6 outlets incl. balancing dampers  
N..1... - FL = Flange connection 30mm for rectangular outlet

## Ordering information:

### Standard terminals:

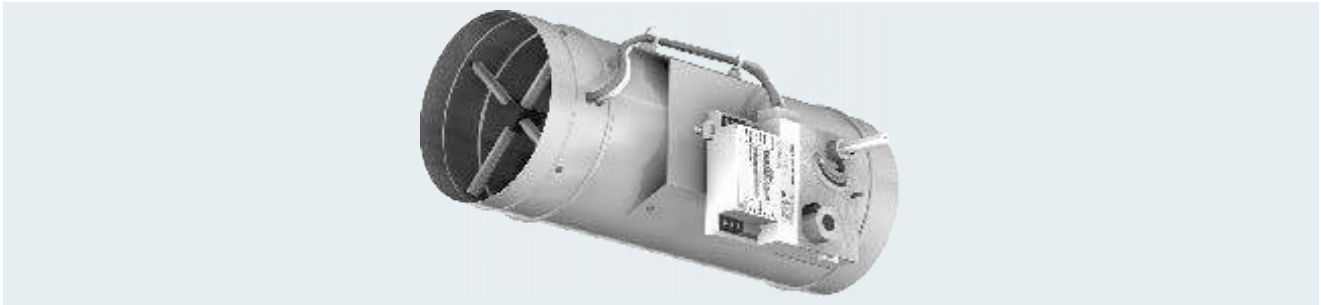
- quantity of terminals
- complete 7 digit code
- terminal size or model
- air volume setting ( $V_{max}$ ,  $V_{min}$  etc)
- control handing (standard right side)
- if applicable, electric reheat coil capacity
- supply or return air

### Non standard terminals:

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

# Circular VAV and CAV air volume control terminals

**Technical data**  
**Single wall (NA.....)**  
**Double wall (NB.....)**



## Application

Types NA and NB are circular pressure independent VAV and CAV air volume control terminals. The terminals are designed for the accurate measurement and control of air volumes courtesy of the patented airflow sensor type Flo-Cross®.

In CAV application, the terminals maintain the required constant airflow independent to the inlet static pressure.

In VAV application, the terminals control the air volume to the room, to meet the cooling and heating loads or to control the room or air duct pressure.

The VAV or CAV terminals can be used either for supply or return air applications in new or refurbishment projects. The terminals have single wall (NA) or double wall (NB) construction and can be delivered with a distribution plenum and an accessory hot water or electric reheat coil.

### Features:

- Pressure independent control functions.
- Volume control range 100% to 10%.
- Low pressure loss over the terminal.
- Single or double wall construction.
- Factory fitted distribution plenum with an accessory hot water or electric reheat coil.
- Oval shaped damper blade for linear control characteristics.
- Low leakage damper.
- Low noise level.
- Suitable for all control functions (VAV, CAV, shut-off, etc.) To maximise system energy savings

- Flo-Cross®, 2 x 12 points averaging and signal amplification airflow sensor, ensure airflow measurement accuracy of  $\pm 2.5\%$  in its operating range.
- Maintenance free.

## Technical information

### Casing:

Single or double wall, air-tight construction made of galvanized sheet steel with low casing leakage rate. Casing air leakage Class C according to Standard EN1751.

### Insulation:

The NB models are internally insulated between the inner and outer galvanized steel skins to reduce heat transfer and radiated noise.

### Damper:

Damper blade: made of galvanized steel sandwich construction with twin blades and a neoprene gasket with low leakage. Closed blade damper air leakage, Class 4 according to standard EN1751, except diameters 100 and 125 are Class 3.

Damper shaft: A luminium,  $\Phi$  12mm with self lubricating nylon bearing

### Flo-Cross:

Extruded aluminium construction with nylon core and feet.

### Distribution plenum:

Made of galvanised sheet steel with 13 mm internal isolation. Plenum with standard rectangular or multiple (4 x circular) outlet construction. Optional 1, 2, 3 or 6 circular outlets are possible. Outlet spigots are made of galvanised steel and optionally can be provided with volume control dampers.

### Reheat coil:

Choice of 1, 2 or 4-row hot water reheat coil or electric reheat coil (230VAC/1-phase or 400VAC/3-phase).

### Controls:

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

## Delivery format:

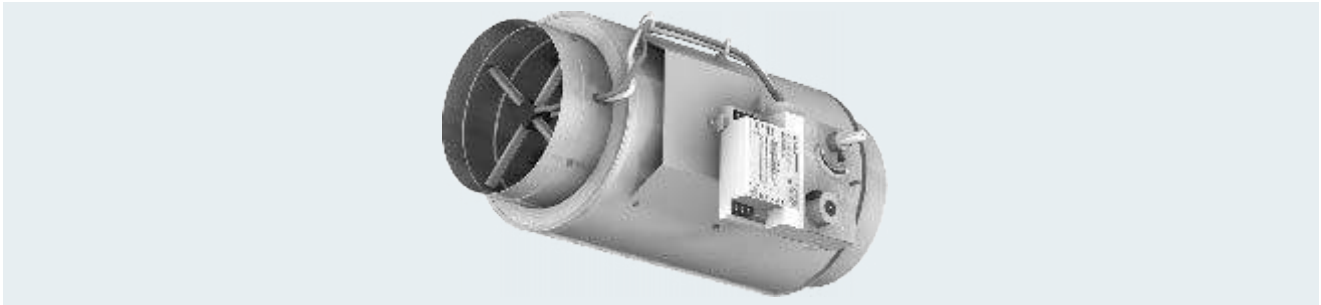
### Delivery format:

- 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.



# Circular VAV and CAV air volume control terminals

**Technical data**  
**Single wall (NA.....)**  
**Double wall (NB.....)**



## 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 class C according to standard EN1751. The closed blade damper air leakage shall be class 4 according to standard EN1751 except diameters 100 and 125 shall be class 3. The VAV terminals shall have oval shaped damper blade with neoprene gasket and an aluminium damper shaft with self lubricating nylon bearings.

A Flo-cross averaging air flow sensor with at least 2 x 12 test points and amplified signal, with a sensing accuracy better than  $\pm 2.5\%$  shall control the airflow. 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:

Maximum air volume 250 l/s  
Minimum air volume 60 l/s  
Minimum air volume 120 l/s (in case of reheat)  
Terminal size 200 mm  
Max. pressure loss 38 Pa  
Max. discharge sound index < NC30 (@250Pa  $\Delta p$ )  
Max. radiated sound index < NC30 (@250Pa  $\Delta p$ )

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

Manufacture: Barcol-Air

## Installation Instructions:

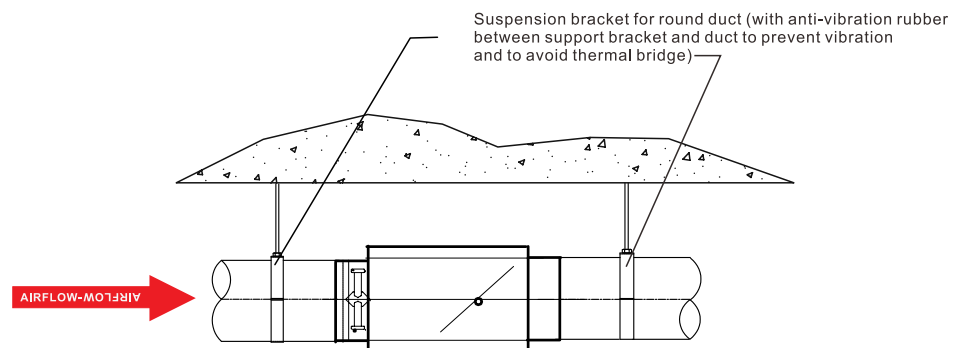
The Barcol-Air VAV terminals shall be installed using at least two duct support brackets, with anti-vibration rubbers mounting as shown in the drawing below. Each of these bracket shall be fixed with threaded rods to the ceiling slab above.

### 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.
3. Provides some flexibility to the final location of the VAV terminals.
4. Use at least one diameter length of straight air duct of the same cross section as the VAV unit before the VAV inlet to ensure the flow sensor accuracy.

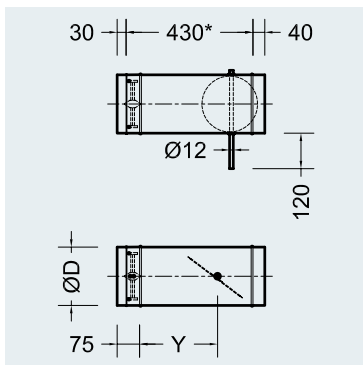
5. Additional manual volume control dampers (VCD's) should not be installed before the unit inlet.
6. All connections shall be thermally isolated.
7. Pressure sensing tubes for the FloCross airflow sensor shall not be "kinked" or otherwise obstructed by external duct insulation.

See drawing below.

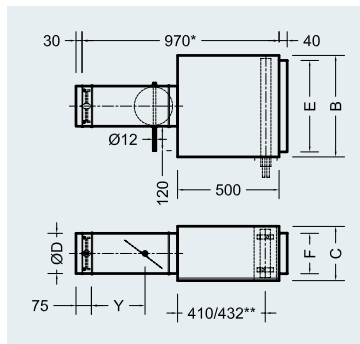


# Circular VAV and CAV air volume control terminals

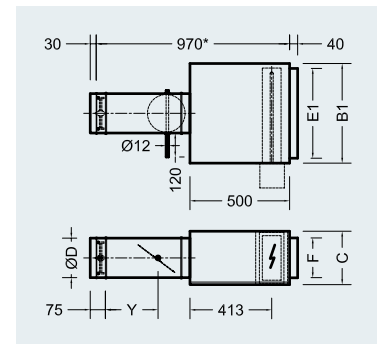
## Technical data Single wall (NA.....)



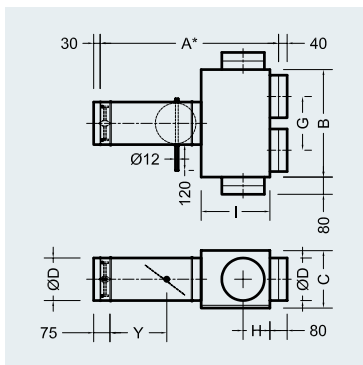
Type NAOAOB



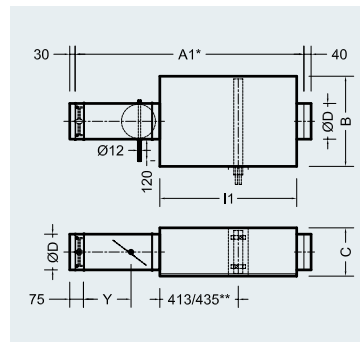
Type NAOG.OB



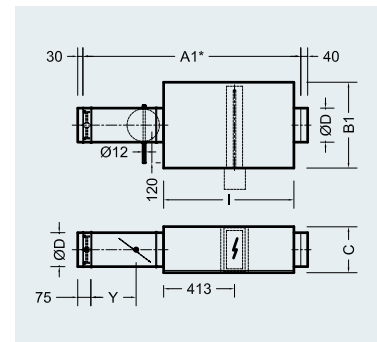
Type NAON.OB



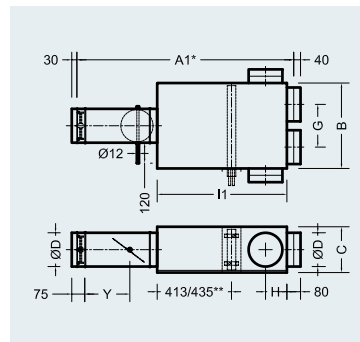
Type NAOCOOB



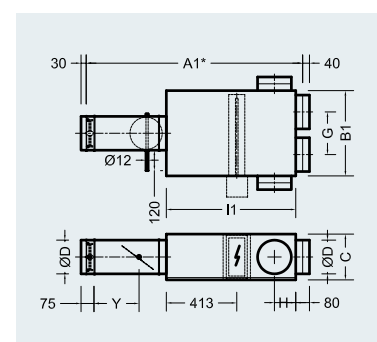
Type NAOH.OB



Type NAOP.OB



Type NAOJ.OB



Type NAOQ.OB

### Dimensions NA terminals

| Modle | 100  | 125  | 160  | 200  | 250  | 315  | 355  | 400  |
|-------|------|------|------|------|------|------|------|------|
| A*    | 780  | 780  | 780  | 830  | 880  | 930  | 990  | 1030 |
| A1*   | 1230 | 1230 | 1230 | 1280 | 1330 | 1380 | 1440 | 1480 |
| B     | 330  | 330  | 400  | 500  | 600  | 740  | 820  | 910  |
| B1    | 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  |
| E     | 275  | 275  | 350  | 450  | 550  | 690  | 770  | 850  |
| E1    | 275  | 275  | 350  | 350  | 550  | 550  | 550  | 550  |
| F     | 170  | 170  | 175  | 200  | 250  | 330  | 330  | 380  |
| G     | 180  | 180  | 215  | 255  | 305  | 370  | 410  | 455  |
| H     | 125  | 125  | 125  | 125  | 170  | 200  | 250  | 250  |
| I     | 270  | 270  | 270  | 320  | 370  | 420  | 520  | 520  |
| I1    | 720  | 720  | 720  | 770  | 820  | 870  | 970  | 970  |
| Y     | 304  | 304  | 304  | 294  | 279  | 254  | 239  | 229  |

Other dimensions are available upon request.

### Kv values

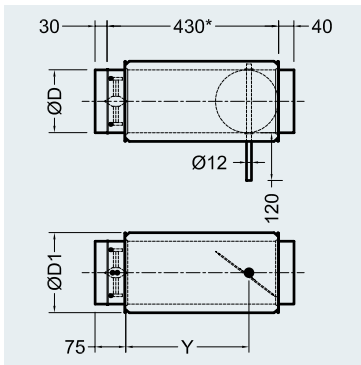
| Modle         | 100 | 125 | 160  | 200  | 250  | 315  | 355  | 400  |
|---------------|-----|-----|------|------|------|------|------|------|
| Kv (l/s / Pa) | 5.5 | 8.5 | 15.0 | 24.9 | 35.4 | 58.9 | 74.3 | 92.6 |

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

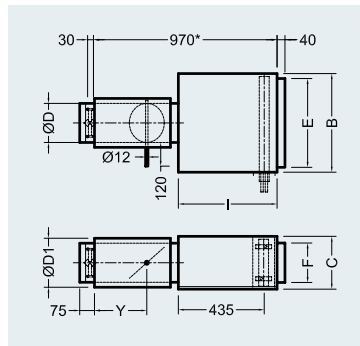
Flow = Kv x  $\sqrt{\Delta P_{fc}}$   
 $\Delta P_{fc}$  = Flo-Cross signal  
If  $\Delta P_{fc}$  = 30 Pa and VAV size = 160  
Flow = 15.0 x  $\sqrt{30}$  = 82 l/s

# Circular VAV and CAV air volume control terminals

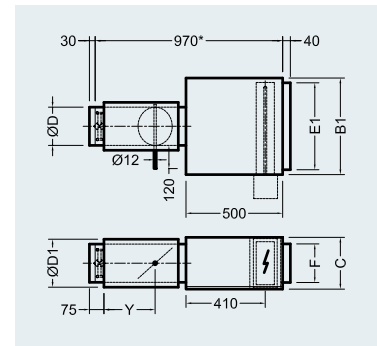
## Model overview : Double wall type (NB.....)



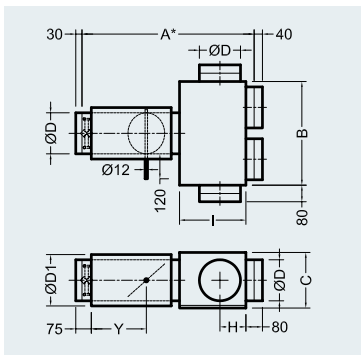
Type NBOBOB



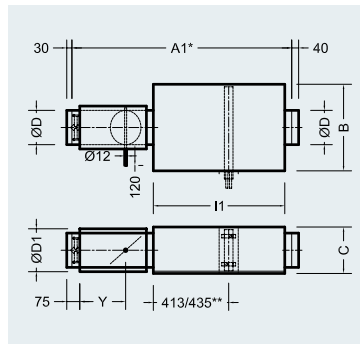
Type NBOG.OB



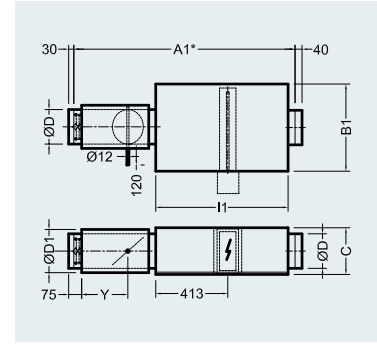
Type NNON.OB



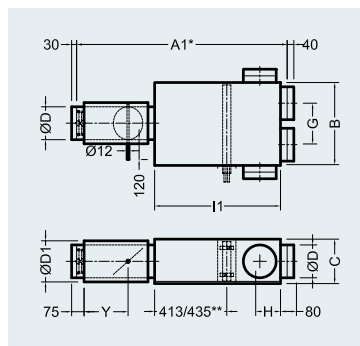
Type NBOCOOB



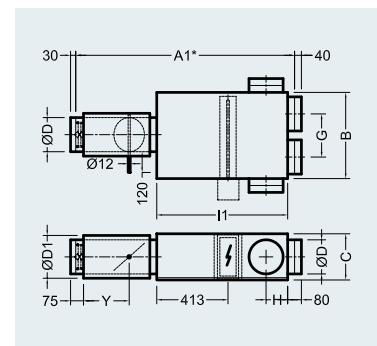
Type NBOH.OB



Type NBOP.OB



Type NBOJ.OB



Type NBOQ.OB

### Dimensions NA terminals

| 规格   | 100  | 125  | 160  | 200  | 250  | 315  | 355  | 400  |
|------|------|------|------|------|------|------|------|------|
| A*   | 780  | 780  | 780  | 830  | 880  | 930  | 990  | 1030 |
| A1** | 1230 | 1230 | 1230 | 1280 | 1330 | 1380 | 1440 | 1480 |
| B    | 330  | 330  | 400  | 500  | 600  | 740  | 820  | 910  |
| B1   | 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  |
| E    | 275  | 275  | 350  | 450  | 550  | 690  | 770  | 850  |
| E1   | 275  | 275  | 350  | 350  | 550  | 550  | 550  | 550  |
| F    | 170  | 170  | 175  | 200  | 250  | 330  | 330  | 380  |
| G    | 180  | 180  | 215  | 255  | 305  | 370  | 410  | 455  |
| H    | 125  | 125  | 125  | 125  | 170  | 200  | 250  | 250  |
| I    | 270  | 270  | 270  | 320  | 370  | 420  | 520  | 520  |
| I1   | 720  | 720  | 720  | 770  | 820  | 870  | 970  | 970  |
| Y    | 304  | 304  | 304  | 294  | 279  | 254  | 239  | 229  |

Other dimensions are available upon request.

### Kv values

| Modle         | 100 | 125 | 160  | 200  | 250  | 315  | 355  | 400  |
|---------------|-----|-----|------|------|------|------|------|------|
| Kv (l/s / Pa) | 5.5 | 8.5 | 15.0 | 24.9 | 35.4 | 58.9 | 74.3 | 92.6 |

All dimensions in mm.

\* = Installed length.

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

Flow = Kv x  $\sqrt{\Delta P_{fc}}$   
 $\Delta P_{fc}$  = Flo-Cross signal  
 If  $\Delta P_{fc}$  = 30 Pa and VAV size = 160  
 Flow = 15.0 x  $\sqrt{30}$  = 82 l/s



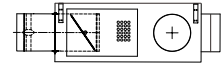






# Circular VAV and CAV air volume control terminals

Type NAOOOB  
NBOOOB



Sound data  $\Delta p = 250$  Pa

| Model | data referring to inlet spigot |        |                   |        | min. $\Delta p$ Pa | $\Delta p = 250$ Pa      |         |         |       |    |    |                            |        |        |                          |         |         |                            |    |    |           |        |        |                          |         |         |       |     |    |           |    |    |    |    |    |   |   |   |   |   |   |
|-------|--------------------------------|--------|-------------------|--------|--------------------|--------------------------|---------|---------|-------|----|----|----------------------------|--------|--------|--------------------------|---------|---------|----------------------------|----|----|-----------|--------|--------|--------------------------|---------|---------|-------|-----|----|-----------|----|----|----|----|----|---|---|---|---|---|---|
|       | air volume                     |        |                   |        |                    | discharge sound          |         |         |       |    |    | radiated sound single wall |        |        |                          |         |         | radiated sound double wall |    |    |           |        |        |                          |         |         |       |     |    |           |    |    |    |    |    |   |   |   |   |   |   |
|       |                                |        |                   |        |                    | $L_w$ in dB/Oct.(re 1pW) |         |         |       |    |    | Lp values                  |        |        | $L_w$ in dB/Oct.(re 1pW) |         |         |                            |    |    | Lp values |        |        | $L_w$ in dB/Oct.(re 1pW) |         |         |       |     |    | Lp values |    |    |    |    |    |   |   |   |   |   |   |
|       | Velocity                       | 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 | 125 Hz    | 250 Hz | 500 Hz | 1000 Hz                  | 2000 Hz | 4000 Hz | dB(A) | NC  | NR |           |    |    |    |    |    |   |   |   |   |   |   |
| m/s   | l/s                            | CFM    | m <sup>3</sup> /h | dB     |                    |                          |         |         |       | dB |    |                            |        |        |                          | dB      |         |                            |    |    |           |        |        |                          |         |         |       |     |    |           |    |    |    |    |    |   |   |   |   |   |   |
| 100   | 2                              | 15     | 31                | 53     | 2                  | 36                       | 36      | 27      | 23    | 18 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | 26 | 23        | 26     | 27     | 30                       | 28      | -       | -     | -   | 21 | -         | -  | -  | -  | -  | -  | - | - |   |   |   |   |
|       | 4                              | 29     | 62                | 106    | 10                 | 42                       | 41      | 33      | 28    | 23 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 33        | 30     | 33     | 34                       | 37      | 35      | -     | -   | -  | 28        | 22 | 18 | -  | -  | 18 | - | - | - |   |   |   |
|       | 6                              | 44     | 94                | 160    | 22                 | 46                       | 45      | 36      | 32    | 27 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 37        | 34     | 37     | 38                       | 41      | 39      | 21    | -   | -  | 32        | 26 | 22 | 20 | 20 | 22 | - | - | - | - |   |   |
|       | 8                              | 59     | 125               | 213    | 38                 | 49                       | 48      | 39      | 35    | 31 | 20 | 22                         | -      | -      | -                        | -       | -       | -                          | -  | -  | 40        | 37     | 40     | 41                       | 44      | 42      | 24    | -   | -  | 35        | 29 | 25 | 23 | 23 | 25 | - | - | - | - |   |   |
|       | 10                             | 74     | 156               | 266    | 60                 | 51                       | 51      | 42      | 37    | 34 | 23 | 25                         | -      | -      | 21                       | 42      | 39      | 42                         | 43 | 46 | 44        | 26     | 22     | 24                       | 26      | 22      | 24    | 38  | 32 | 28        | 25 | 25 | 27 | -  | -  | - | - |   |   |   |   |
| 125   | 2                              | 23     | 49                | 84     | 2                  | 34                       | 35      | 28      | 23    | 18 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 35        | 31     | 31     | 28                       | 30      | 24      | -     | -   | -  | 22        | 17 | -  | -  | -  | -  | - | - | - |   |   |   |
|       | 4                              | 47     | 99                | 168    | 7                  | 41                       | 41      | 33      | 29    | 23 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 41        | 38     | 38     | 35                       | 37      | 31      | -     | -   | -  | 29        | 24 | 21 | 18 | -  | 19 | - | - | - |   |   |   |
|       | 6                              | 70     | 149               | 253    | 17                 | 45                       | 45      | 37      | 33    | 26 | 17 | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 45        | 42     | 42     | 39                       | 41      | 35      | 24    | -   | -  | 33        | 28 | 25 | 22 | 21 | 23 | - | - | - | - |   |   |
|       | 8                              | 94     | 198               | 337    | 30                 | 49                       | 48      | 40      | 36    | 29 | 21 | 22                         | -      | -      | -                        | 48      | 45      | 45                         | 42 | 44 | 38        | 27     | -      | -                        | 22      | 36      | 31    | 28  | 25 | 24        | 26 | -  | -  | -  | -  | - | - | - | - |   |   |
|       | 10                             | 117    | 248               | 421    | 46                 | 52                       | 51      | 43      | 38    | 32 | 24 | 25                         | -      | -      | 21                       | 50      | 47      | 47                         | 44 | 46 | 40        | 29     | 22     | 24                       | 29      | 22      | 24    | 39  | 34 | 31        | 27 | 26 | 28 | -  | -  | - | - | - |   |   |   |
| 160   | 2                              | 39     | 82                | 139    | 2                  | 33                       | 35      | 28      | 24    | 21 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 35        | 31     | 31     | 28                       | 30      | 24      | -     | -   | -  | 24        | 19 | 18 | -  | -  | -  | - | - | - |   |   |   |
|       | 4                              | 78     | 164               | 279    | 6                  | 41                       | 41      | 34      | 30    | 25 | 19 | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 41        | 38     | 38     | 35                       | 37      | 31      | -     | -   | -  | 31        | 26 | 25 | 20 | 18 | 20 | - | - | - | - |   |   |
|       | 6                              | 116    | 246               | 418    | 14                 | 46                       | 45      | 37      | 34    | 28 | 22 | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 45        | 42     | 42     | 39                       | 41      | 35      | 24    | -   | -  | 35        | 30 | 29 | 24 | 22 | 24 | - | - | - | - |   |   |
|       | 8                              | 155    | 328               | 558    | 26                 | 50                       | 48      | 41      | 37    | 31 | 24 | 22                         | -      | -      | -                        | 48      | 45      | 45                         | 42 | 44 | 38        | 27     | -      | -                        | 22      | 38      | 33    | 32  | 27 | 25        | 27 | -  | -  | -  | -  | - | - | - | - |   |   |
|       | 10                             | 194    | 410               | 697    | 40                 | 53                       | 51      | 43      | 39    | 33 | 26 | 25                         | -      | -      | 21                       | 50      | 47      | 47                         | 44 | 46 | 40        | 29     | 22     | 24                       | 40      | 22      | 24    | 40  | 35 | 34        | 29 | 27 | 29 | -  | -  | - | - | - | - | - |   |
| 200   | 2                              | 61     | 129               | 219    | 1                  | 34                       | 26      | 23      | 19    | -  | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 36        | 31     | 31     | 29                       | 30      | 24      | -     | -   | -  | 25        | 21 | 20 | -  | -  | -  | - | - | - | - |   |   |
|       | 4                              | 122    | 258               | 439    | 6                  | 43                       | 37      | 32      | 27    | 21 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 43        | 38     | 38     | 36                       | 37      | 31      | 21    | -   | -  | 32        | 28 | 27 | 22 | 19 | 21 | - | - | - | - |   |   |
|       | 6                              | 183    | 387               | 658    | 13                 | 48                       | 43      | 38      | 31    | 25 | 18 | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 47        | 42     | 42     | 40                       | 41      | 35      | 25    | -   | -  | 36        | 32 | 31 | 26 | 23 | 25 | - | - | - | - |   |   |
|       | 8                              | 244    | 516               | 878    | 23                 | 52                       | 47      | 42      | 35    | 29 | 21 | 23                         | -      | -      | -                        | 50      | 45      | 45                         | 43 | 44 | 38        | 28     | -      | -                        | 22      | 39      | 35    | 34  | 29 | 23        | 28 | -  | -  | -  | -  | - | - | - | - |   |   |
|       | 10                             | 305    | 645               | 1097   | 36                 | 55                       | 51      | 45      | 38    | 32 | 24 | 27                         | -      | -      | 21                       | 52      | 47      | 47                         | 45 | 46 | 40        | 30     | 22     | 24                       | 41      | 22      | 24    | 41  | 37 | 36        | 31 | 29 | 30 | -  | -  | - | - | - | - | - |   |
| 250   | 2                              | 96     | 203               | 345    | 1                  | 35                       | 35      | 28      | 24    | 19 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 36        | 31     | 31     | 29                       | 30      | 24      | -     | -   | -  | 25        | 20 | 20 | -  | -  | -  | - | - | - | - |   |   |
|       | 4                              | 192    | 406               | 690    | 5                  | 44                       | 43      | 36      | 30    | 24 | 18 | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 43        | 38     | 38     | 36                       | 37      | 31      | 21    | -   | -  | 32        | 27 | 27 | 22 | 20 | 21 | - | - | - | - |   |   |
|       | 6                              | 288    | 609               | 1035   | 11                 | 50                       | 48      | 41      | 34    | 28 | 22 | 22                         | -      | -      | -                        | 47      | 42      | 42                         | 40 | 41 | 35        | 25     | -      | -                        | 36      | 31      | 31    | 26  | 24 | 25        | -  | -  | -  | -  | -  | - | - | - | - |   |   |
|       | 8                              | 383    | 812               | 1380   | 19                 | 54                       | 52      | 44      | 37    | 31 | 24 | 26                         | -      | -      | 22                       | 50      | 45      | 45                         | 43 | 44 | 38        | 28     | -      | -                        | 22      | 39      | 34    | 34  | 29 | 27        | 28 | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 10                             | 479    | 1015              | 1725   | 30                 | 57                       | 55      | 47      | 40    | 33 | 27 | 29                         | 22     | 25     | 22                       | 52      | 47      | 47                         | 45 | 46 | 40        | 30     | 22     | 24                       | 41      | 22      | 24    | 41  | 37 | 37        | 31 | 29 | 30 | -  | -  | - | - | - | - | - |   |
| 315   | 2                              | 153    | 324               | 550    | 1                  | 39                       | 42      | 27      | 26    | 23 | -  | -                          | -      | -      | -                        | -       | -       | -                          | -  | -  | 37        | 31     | 31     | 29                       | 30      | 25      | -     | -   | -  | 27        | 24 | 24 | 19 | -  | -  | - | - | - | - |   |   |
|       | 4                              | 306    | 648               | 1101   | 5                  | 48                       | 48      | 34      | 32    | 28 | 20 | 22                         | -      | -      | -                        | 43      | 37      | 38                         | 36 | 36 | 32        | 21     | -      | -                        | 34      | 31      | 31    | 26  | 22 | 23        | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 6                              | 459    | 971               | 1651   | 11                 | 54                       | 52      | 39      | 36    | 31 | 24 | 27                         | -      | -      | 22                       | 47      | 41      | 42                         | 40 | 40 | 36        | 25     | -      | -                        | 38      | 35      | 35    | 30  | 26 | 27        | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 8                              | 612    | 1295              | 2202   | 19                 | 59                       | 56      | 43      | 39    | 34 | 27 | 31                         | 23     | 26     | 29                       | 50      | 44      | 44                         | 43 | 43 | 39        | 27     | -      | -                        | 41      | 38      | 38    | 336 | 29 | 30        | -  | -  | -  | -  | -  | - | - | - | - | - | - |
|       | 10                             | 764    | 1619              | 2752   | 29                 | 63                       | 59      | 46      | 42    | 37 | 30 | 34                         | 28     | 29     | 52                       | 46      | 47      | 45                         | 45 | 41 | 30        | 21     | 23     | 44                       | 40      | 40      | 35    | 31  | 32 | 20        | -  | -  | -  | -  | -  | - | - | - | - | - |   |
| 355   | 2                              | 195    | 412               | 701    | 1                  | 39                       | 49      | 32      | 31    | 25 | 23 | 21                         | -      | -      | -                        | 37      | 31      | 31                         | 30 | 30 | 26        | -      | -      | -                        | 28      | 25      | 25    | 20  | -  | -         | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 4                              | 389    | 824               | 1401   | 4                  | 49                       | 53      | 38      | 35    | 28 | 25 | 25                         | 20     | 23     | 44                       | 38      | 38      | 37                         | 37 | 33 | 21        | -      | -      | -                        | 35      | 32      | 32    | 27  | 22 | 24        | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 6                              | 584    | 1236              | 2102   | 10                 | 55                       | 56      | 42      | 38    | 30 | 27 | 29                         | 23     | 26     | 48                       | 42      | 42      | 41                         | 41 | 37 | 25        | -      | -      | 39                       | 36      | 36      | 31    | 26  | 28 | -         | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 8                              | 779    | 1649              | 2803   | 18                 | 60                       | 58      | 45      | 41    | 33 | 30 | 32                         | 26     | 28     | 50                       | 45      | 45      | 44                         | 44 | 40 | 28        | -      | -      | 22                       | 42      | 39      | 39    | 34  | 29 | 31        | 20 | -  | -  | -  | -  | - | - | - | - | - | - |
|       | 10                             | 973    | 2061              | 3503   | 28                 | 64                       | 61      | 48      | 44    | 35 | 32 | 35                         | 30     | 31     | 53                       | 47      | 47      | 46                         | 46 | 42 | 30        | 22     | 24     | 44                       | 41      | 41      | 36    | 32  | 33 | 23        | -  | -  | -  | -  | -  | - | - | - | - | - | - |
| 400   | 2                              | 248    | 524               | 891    | 1                  | 40                       | 51      | 33      | 32    | 27 | 21 | 23                         | -      | -      | 21                       | 37      | 31      | 30                         | 30 | 30 | 26        | -      | -      | -                        | 28      | 25      | 25    | 21  | -  | 17        | -  | -  | -  | -  | -  | - | - | - | - | - |   |
|       | 4                              | 495    | 1049              | 1783   | 4                  | 50                       | 55      | 39      | 36    | 30 | 23 | 27                         | 22     | 25     | 44                       | 37      | 37      | 37                         | 36 | 33 | 21        | -      | -      | -                        | 35      | 32      | 32    | 28  | 23 | 24        | -  | -  | -  | -  | -  | - | - | - | - | - | - |
|       | 6                              | 743    | 1573              | 2674   | 9                  | 56                       | 58      | 43      | 39    | 32 | 25 | 31                         | 25     | 28     | 48                       | 41      | 41      | 41                         | 40 | 37 | 25        | -      | -      | -                        | 39      | 36      | 36    | 32  | 27 | 28        | -  | -  | -  | -  | -  | - | - | - | - | - | - |
|       | 8                              | 990    | 2097              | 3565   | 17                 | 61                       | 60      | 46      | 42    | 35 | 28 | 34                         | 28     | 31     | 50                       | 44      | 44      | 43                         | 43 | 39 | 27        | -      | -      | 21                       | 42      | 39      | 39    | 35  | 30 | 31        | 21 | -  | -  | -  | -  | - | - | - | - | - | - |
|       | 10                             | 1238   | 2326              | 4456   | 26                 | 65                       | 63      | 49      | 45    | 37 | 30 | 37                         | 31     | 33     | 53                       | 46      | 46      | 46                         | 45 | 42 | 30        | 21     | 23     | 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.
- $L_w$  in dB/Oct.(re 1pW) are sound power levels for discharge sound and case radiated sound. Figures less than 17 dB are indicated by "-".
- 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.

- Lp values are including a room absorption of 10 dB/Oct.
- DB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "-".
- $\Delta p$  is static pressure drop across VAV air volume control terminal with damper fully open.
- For non standard applications and/or selections, please contact our technical staff.

Table 1: Assumptions for additional attenuation

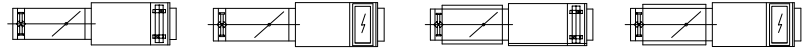
| Hz             | 125 | 250 | 500 | 1K | 2K | 4K |
|----------------|-----|-----|-----|----|----|----|
| Discharge (dB) | 5   | 10  | 20  | 30 | 30 | 25 |
| Radiated (dB)  | 2   | 5   | 10  | 15 | 15 | 20 |

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 |

# Circular VAV and CAV air volume control terminals

Type NAOG.OB NAON.OB  
NBOG.OB NBON.OB



Sound data  $\Delta p = 125 \text{ Pa}$

| Model            | data referring to inlet spigot |      |      |                   | $\Delta p = 125 \text{ Pa}$ |        |        |         |         |         |           |    |                            |                          |        |        |         |         |                            |           |    |    |                          |        |        |         |         |         |           |    |    |    |    |    |   |   |
|------------------|--------------------------------|------|------|-------------------|-----------------------------|--------|--------|---------|---------|---------|-----------|----|----------------------------|--------------------------|--------|--------|---------|---------|----------------------------|-----------|----|----|--------------------------|--------|--------|---------|---------|---------|-----------|----|----|----|----|----|---|---|
|                  |                                |      |      |                   | discharge sound             |        |        |         |         |         |           |    | radiated sound single wall |                          |        |        |         |         | radiated sound double wall |           |    |    |                          |        |        |         |         |         |           |    |    |    |    |    |   |   |
|                  | air volume                     |      |      |                   | $L_w$ in dB/Oct.(re 1pW)    |        |        |         |         |         | Lp values |    |                            | $L_w$ in dB/Oct.(re 1pW) |        |        |         |         |                            | Lp values |    |    | $L_w$ in dB/Oct.(re 1pW) |        |        |         |         |         | Lp values |    |    |    |    |    |   |   |
|                  |                                |      |      |                   | 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 | 125 Hz                   | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | dB(A)     | NC | NR |    |    |    |   |   |
| Velocity         | m/s                            | l/s  | CFM  | m <sup>3</sup> /h | Pa                          |        |        |         |         |         | dB        |    |                            |                          |        |        | dB      |         |                            |           |    |    | dB                       |        |        |         |         |         |           |    |    |    |    |    |   |   |
| min. $\Delta Ps$ |                                |      |      |                   |                             |        |        |         |         |         |           |    |                            |                          |        |        |         |         |                            |           |    |    |                          |        |        |         |         |         |           |    |    |    |    |    |   |   |
| 100              | 2                              | 15   | 31   | 53                | 3                           | 38     | 37     | 28      | 26      | 21      | -         | -  | -                          | -                        | 19     | -      | 19      | 20      | 23                         | 21        | -  | -  | -                        | -      | -      | -       | -       | -       | -         | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 29   | 62   | 106               | 11                          | 44     | 43     | 34      | 31      | 27      | -         | -  | -                          | -                        | 26     | 23     | 26      | 27      | 30                         | 28        | -  | -  | -                        | -      | -      | -       | -       | 22      | -         | -  | -  | -  | -  | -  | - |   |
|                  | 6                              | 44   | 94   | 160               | 24                          | 48     | 47     | 38      | 35      | 32      | 20        | 21 | -                          | -                        | 30     | 27     | 30      | 31      | 34                         | 32        | -  | -  | -                        | -      | -      | -       | -       | 26      | 20        | -  | -  | -  | -  | 18 | - | - |
|                  | 8                              | 59   | 125  | 213               | 43                          | 51     | 50     | 41      | 38      | 35      | 24        | 24 | -                          | -                        | 33     | 30     | 33      | 34      | 37                         | 35        | -  | -  | -                        | -      | -      | -       | -       | 29      | 23        | 19 | 19 | 19 | 21 | -  | - | - |
|                  | 10                             | 74   | 156  | 266               | 67                          | 53     | 53     | 44      | 42      | 39      | 28        | 26 | -                          | -                        | 35     | 32     | 35      | 36      | 39                         | 37        | -  | -  | -                        | -      | -      | -       | -       | 32      | 26        | 22 | 21 | 21 | 23 | -  | - | - |
| 125              | 2                              | 23   | 49   | 84                | 3                           | 35     | 35     | 28      | 27      | 22      | -         | -  | -                          | -                        | 28     | 24     | 25      | 22      | 23                         | 17        | -  | -  | -                        | -      | -      | -       | -       | -       | -         | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 47   | 99   | 168               | 10                          | 42     | 42     | 34      | 32      | 27      | -         | -  | -                          | -                        | 35     | 31     | 32      | 29      | 30                         | 24        | -  | -  | -                        | -      | -      | -       | -       | 23      | 18        | -  | -  | -  | -  | -  | - | - |
|                  | 6                              | 70   | 149  | 253               | 23                          | 46     | 46     | 38      | 36      | 31      | 21        | 20 | -                          | -                        | 39     | 35     | 36      | 33      | 34                         | 28        | -  | -  | -                        | -      | -      | -       | 27      | 22      | 19        | 18 | -  | 19 | -  | -  | - |   |
|                  | 8                              | 94   | 198  | 337               | 40                          | 50     | 50     | 42      | 40      | 35      | 25        | 23 | -                          | -                        | 42     | 38     | 38      | 35      | 37                         | 31        | 21 | -  | -                        | -      | -      | -       | 30      | 25      | 22        | 21 | 20 | 22 | -  | -  | - |   |
|                  | 10                             | 117  | 248  | 421               | 63                          | 53     | 53     | 45      | 43      | 38      | 29        | 26 | -                          | -                        | 44     | 40     | 41      | 38      | 39                         | 33        | 23 | -  | -                        | -      | -      | -       | 33      | 28      | 25        | 23 | 22 | 24 | -  | -  | - |   |
| 160              | 2                              | 39   | 82   | 139               | 2                           | 34     | 34     | 28      | 26      | 24      | 18        | -  | -                          | -                        | 28     | 24     | 25      | 22      | 23                         | 18        | -  | -  | -                        | -      | -      | -       | 18      | -       | -         | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 78   | 164  | 279               | 9                           | 41     | 40     | 33      | 32      | 28      | 21        | -  | -                          | -                        | 35     | 31     | 32      | 29      | 30                         | 25        | -  | -  | -                        | -      | -      | -       | 25      | 20      | 19        | -  | -  | -  | -  | -  | - |   |
|                  | 6                              | 116  | 246  | 418               | 21                          | 46     | 45     | 37      | 36      | 32      | 24        | -  | -                          | -                        | 39     | 35     | 36      | 33      | 34                         | 29        | -  | -  | -                        | -      | -      | -       | 29      | 24      | 23        | 20 | 18 | 20 | -  | -  | - |   |
|                  | 8                              | 155  | 328  | 558               | 38                          | 50     | 48     | 41      | 39      | 35      | 27        | 22 | -                          | -                        | 42     | 38     | 38      | 35      | 37                         | 31        | 21 | -  | -                        | -      | -      | -       | 32      | 27      | 26        | 23 | 21 | 23 | -  | -  | - |   |
|                  | 10                             | 194  | 410  | 697               | 59                          | 53     | 51     | 44      | 42      | 37      | 30        | 26 | -                          | -                        | 44     | 40     | 41      | 38      | 39                         | 34        | 23 | -  | -                        | -      | -      | -       | 34      | 29      | 28        | 25 | 23 | 25 | -  | -  | - |   |
| 200              | 2                              | 61   | 129  | 219               | 2                           | 34     | 27     | 25      | 22      | 18      | -         | -  | -                          | -                        | 29     | 24     | 24      | 23      | 23                         | 18        | -  | -  | -                        | -      | -      | -       | 19      | -       | -         | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 122  | 258  | 439               | 9                           | 43     | 37     | 34      | 30      | 25      | -         | -  | -                          | -                        | 36     | 31     | 31      | 29      | 30                         | 25        | -  | -  | -                        | -      | -      | -       | 26      | 22      | 21        | 18 | -  | -  | -  | -  | - |   |
|                  | 6                              | 183  | 387  | 658               | 21                          | 48     | 43     | 39      | 34      | 29      | 21        | -  | -                          | -                        | 40     | 35     | 35      | 33      | 34                         | 29        | -  | -  | -                        | -      | -      | -       | 30      | 26      | 25        | 22 | 20 | 21 | -  | -  | - |   |
|                  | 8                              | 244  | 516  | 878               | 38                          | 52     | 47     | 43      | 38      | 33      | 24        | 23 | -                          | -                        | 43     | 38     | 38      | 36      | 37                         | 31        | 21 | -  | -                        | -      | -      | -       | 33      | 29      | 28        | 25 | 22 | 24 | -  | -  | - |   |
|                  | 10                             | 305  | 645  | 1097              | 59                          | 55     | 51     | 46      | 40      | 36      | 27        | 26 | -                          | -                        | 45     | 40     | 40      | 38      | 39                         | 34        | 23 | -  | -                        | -      | -      | -       | 35      | 31      | 30        | 27 | 25 | 26 | -  | -  | - |   |
| 250              | 2                              | 96   | 203  | 345               | 2                           | 36     | 36     | 29      | 27      | 22      | -         | -  | -                          | -                        | 29     | 24     | 24      | 23      | 23                         | 18        | -  | -  | -                        | -      | -      | -       | 19      | -       | -         | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 192  | 406  | 690               | 9                           | 44     | 43     | 37      | 33      | 28      | 21        | -  | -                          | -                        | 36     | 31     | 31      | 29      | 30                         | 25        | -  | -  | -                        | -      | -      | -       | 26      | 21      | 21        | 18 | -  | -  | -  | -  | - |   |
|                  | 6                              | 288  | 609  | 1035              | 21                          | 50     | 48     | 42      | 37      | 31      | 24        | 22 | -                          | -                        | 40     | 35     | 35      | 33      | 34                         | 29        | -  | -  | -                        | -      | -      | -       | 30      | 25      | 25        | 22 | 20 | 21 | -  | -  | - |   |
|                  | 8                              | 383  | 812  | 1380              | 38                          | 53     | 52     | 45      | 40      | 34      | 27        | 26 | -                          | -                        | 43     | 38     | 38      | 36      | 37                         | 31        | 21 | -  | -                        | -      | -      | -       | 33      | 28      | 28        | 25 | 23 | 24 | -  | -  | - |   |
|                  | 10                             | 479  | 1015 | 1725              | 59                          | 57     | 55     | 48      | 42      | 37      | 30        | 29 | 22                         | 25                       | 45     | 40     | 40      | 38      | 39                         | 34        | 23 | -  | -                        | -      | -      | -       | 35      | 31      | 31        | 27 | 25 | 26 | -  | -  | - |   |
| 315              | 2                              | 153  | 324  | 550               | 2                           | 40     | 42     | 29      | 29      | 36      | 18        | -  | -                          | -                        | 30     | 24     | 24      | 23      | 23                         | 19        | -  | -  | -                        | -      | -      | -       | 21      | 18      | 18        | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 306  | 648  | 1101              | 9                           | 49     | 48     | 36      | 34      | 31      | 23        | 22 | -                          | -                        | 37     | 31     | 31      | 30      | 30                         | 26        | -  | -  | -                        | -      | -      | -       | 28      | 25      | 25        | 22 | 18 | 19 | -  | -  | - |   |
|                  | 6                              | 459  | 971  | 1651              | 21                          | 55     | 53     | 41      | 39      | 35      | 27        | 27 | -                          | -                        | 41     | 35     | 35      | 34      | 34                         | 30        | -  | -  | -                        | -      | -      | -       | 32      | 29      | 29        | 26 | 22 | 23 | -  | -  | - |   |
|                  | 8                              | 612  | 1295 | 2202              | 38                          | 60     | 57     | 45      | 43      | 39      | 31        | 31 | 25                         | 27                       | 44     | 38     | 38      | 36      | 37                         | 32        | 21 | -  | -                        | -      | -      | -       | 35      | 32      | 32        | 29 | 25 | 26 | -  | -  | - |   |
|                  | 10                             | 764  | 1619 | 2752              | 59                          | 64     | 60     | 48      | 46      | 42      | 34        | 35 | 30                         | 31                       | 46     | 40     | 40      | 39      | 39                         | 35        | 23 | -  | -                        | -      | -      | -       | 38      | 34      | 34        | 31 | 27 | 28 | -  | -  | - |   |
| 355              | 2                              | 195  | 412  | 701               | 2                           | 40     | 49     | 33      | 33      | 27      | 24        | -  | -                          | -                        | 30     | 24     | 24      | 23      | 23                         | 19        | -  | -  | -                        | -      | -      | -       | 22      | 19      | 19        | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 389  | 824  | 1401              | 9                           | 50     | 53     | 39      | 37      | 31      | 27        | 25 | -                          | -                        | 37     | 31     | 31      | 30      | 30                         | 26        | -  | -  | -                        | -      | -      | -       | 29      | 26      | 26        | 23 | 18 | 20 | -  | -  | - |   |
|                  | 6                              | 584  | 1236 | 2102              | 21                          | 56     | 56     | 43      | 41      | 34      | 30        | 29 | 23                         | 26                       | 41     | 35     | 35      | 34      | 34                         | 30        | -  | -  | -                        | -      | -      | -       | 33      | 30      | 30        | 27 | 23 | 24 | -  | -  | - |   |
|                  | 8                              | 779  | 1649 | 2803              | 38                          | 61     | 59     | 47      | 44      | 37      | 33        | 33 | 27                         | 29                       | 44     | 38     | 38      | 37      | 37                         | 33        | 21 | -  | -                        | -      | -      | -       | 36      | 33      | 33        | 30 | 25 | 27 | -  | -  | - |   |
|                  | 10                             | 973  | 2061 | 3503              | 59                          | 65     | 62     | 50      | 47      | 40      | 36        | 37 | 31                         | 32                       | 46     | 40     | 40      | 39      | 39                         | 35        | 23 | -  | -                        | -      | -      | -       | 38      | 35      | 35        | 32 | 28 | 29 | -  | -  | - |   |
| 400              | 2                              | 248  | 524  | 891               | 2                           | 41     | 51     | 34      | 34      | 29      | 22        | 22 | -                          | -                        | 20     | 30     | 24      | 24      | 23                         | 23        | 19 | -  | -                        | -      | -      | -       | 22      | 19      | 19        | -  | -  | -  | -  | -  | - |   |
|                  | 4                              | 495  | 1049 | 1783              | 9                           | 51     | 55     | 40      | 38      | 33      | 25        | 27 | 22                         | 25                       | 37     | 31     | 31      | 30      | 30                         | 26        | -  | -  | -                        | -      | -      | -       | 29      | 26      | 26        | 24 | 19 | 20 | -  | -  | - |   |
|                  | 6                              | 743  | 1573 | 2674              | 21                          | 57     | 58     | 44      | 42      | 36      | 28        | 31 | 26                         | 28                       | 41     | 35     | 35      | 34      | 34                         | 30        | -  | -  | -                        | -      | -      | -       | 33      | 30      | 30        | 28 | 23 | 24 | -  | -  | - |   |
|                  | 8                              | 990  | 2097 | 3565              | 38                          | 62     | 61     | 48      | 45      | 39      | 31        | 35 | 29                         | 31                       | 44     | 38     | 37      | 37      | 37                         | 33        | 21 | -  | -                        | -      | -      | -       | 36      | 33      | 33        | 31 | 26 | 27 | -  | -  | - |   |
|                  | 10                             | 1238 | 2326 | 4456              | 59                          | 66     | 64     | 51      | 48      | 42      | 34        | 38 | 33                         | 34                       | 46     | 40     | 40      | 39      | 39                         | 35        | 23 | -  | -                        | -      | -      | -       | 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.  $L_w$  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 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   | 3   | 4   | 6   | 11 | 10 | 12 | dB |
| 125   | 3   | 4   | 6   | 11 | 10 | 12 | dB |
| 160   | 2   | 6   | 10  | 10 | 10 | 11 | dB |
| 200   | 2   | 5   | 10  | 10 | 10 | 11 | dB |
| 250   | 2   | 5   | 10  | 11 | 10 | 10 | dB |
| 315   | 1   | 4   | 9   | 10 | 10 | 10 | dB |
| 355   | 1   | 4   | 9   | 10 | 10 | 10 | dB |
| 400   | 1   | 3   | 9   | 10 | 10 | 10 | dB |









