



# CIRCULAR VAV TERMINALS

## PRESSURE INDEPENDENT TYPE

NA | NB TYPE





## Composition type designation:

**N - B - O - J - D - O - 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: **Controls (manufacturer)**

O = without controls  
 For controls, contact our sales staff

**Q** Position 4: **Outlet**

A = rectangular outlet  
 B = circular outlet  
 C = 4 circular outlets ('Octopus')  
 E = with integral sound attenuator (only possible with a double wall unit, type NBOE...)  
 G = rectangular outlet and provision for integral hot water reheat coil  
 H = circular 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  
 P = circular 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 5: **Reheat coil**

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

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

O = without controls  
 For controls, contact our sales staff  
 R = code for terminal with integral sound attenuator in combination with double wall return type unit.

**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:

**N B O J D O B**

Type

**1 6 0 R**

Model  
100-400

Handling  
controls  
&  
Heater

**0 0 0 0**

Electric heater  
capacity (Watt)

## 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

## 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 30 mm for rectangular outlet

Type NA..... / NB.....



## Application

Types NA and NB are circular pressure-independent VAV and CAV air volume control terminals. The terminals are designed particularly for systems with space and installation restrictions and 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, depending on the cooling load required thus saving energy consumption in both cooling and heating applications.

Alternatively VAV terminals are ideal to be used for CO<sub>2</sub> control. Dependent of the indoor air quality, always the correct amount of fresh air will be supplied to the room. Of course the primary air handling system need to be suitable for this.

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

### Features:

- Pressure independent control functions.
- Volume control range 100% down to 10%.
- Low pressure loss over the terminal.
- Single or double wall construction.
- Factory fitted distribution plenum with built-in hot water or electric reheat coil.
- Oval shaped damper blade for linear control characteristics.
- Low leakage damper, less than 2% of Vnom at 750 Pa.
- Low noise production.
- Suitable for all control functions (VAV, CAV, shut-off, etc.) 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:

Single or double wall, air-tight construction made of galvanized sheet steel (non spiral), casing leakage rate to Class II VDI 3803 or DIN 24 194 part 2. Duct-sleeve connections at the in- and outlet are suitable for DIN 24 145 or DIN 24 146 connections. In case of double wall construction 25 mm insulation material is used, completely enclosed by the double wall construction.

### Insulation:

The terminal is supplied with 25 mm thermal and acoustical insulation (30 kg/m<sup>3</sup>) complying to: NFPA90A and 90B surface burning characteristics, BS476 part 6 and 7 fire propagation, UL 181 class 0 surface spread of flame and UL 94 HF1 flammability.

### Damper:

Damper blade: made of steel, sandwich construction of twin blade and neoprene gasket with low leakage according to DIN 1946, part 4. Damper shaft: aluminium, ø12 mm with self lubricating Nylon bearings.

### Flo-Cross®:

Extruded aluminium construction with nylon core + feet.

### Distribution plenum:

Made of galvanized sheet steel with 13 mm internal isolation. Plenum with standard rectangular or multiple (4 x circular) outlet construction. Optional single, double, triple or six circular outlets are possible. Outlet spigots are made of flame retardant polymer and optionally can be provided with volume control dampers made of galvanized sheet steel.

### Reheat coil:

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

More detailed technical information can be found in the separate NO documentation.

### Controls:

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

Delivery format

## 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 on site delivered terminal can directly be installed and commissioned.
- Controls location and hot water or electric connections are as a standard fitted on the right hand side of the terminal when looking in the direction of the airflow.
- On request, the terminal can be delivered with connections on the left hand side.
- When terminals are ordered with controls, these will be factory fitted, wired and calibrated upon request.
- For terminals ordered with 'free-issue' third party controls, wiring diagrams and mounting instructions must be provided.

Type NA..... / NB.....



### Specify as:

Example:

Supply and install, variable air volume terminals, double-wall construction with distribution plenum with 4 circular outlets, constructed from galvanized sheet steel. The casing leakage rate shall be classified according to class II, VDI 3803/DIN 24 194 and the duct-sleeve connections shall be suitable for DIN 24 145 or DIN 24 146 respectively. The VAV terminals shall have a low leakage, sandwich construction and oval shaped damper blade with neoprene gasket and an aluminium damper shaft with self lubricating Nylon bearings.

A centre averaging airflow sensor with at least 2 x 12 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® compatible, 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 Δp)  
Max. radiated sound index  
< NC30 (@250Pa Δp)

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

Manufacturer: Barcol-Air, the Netherlands

### Installation instructions:

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

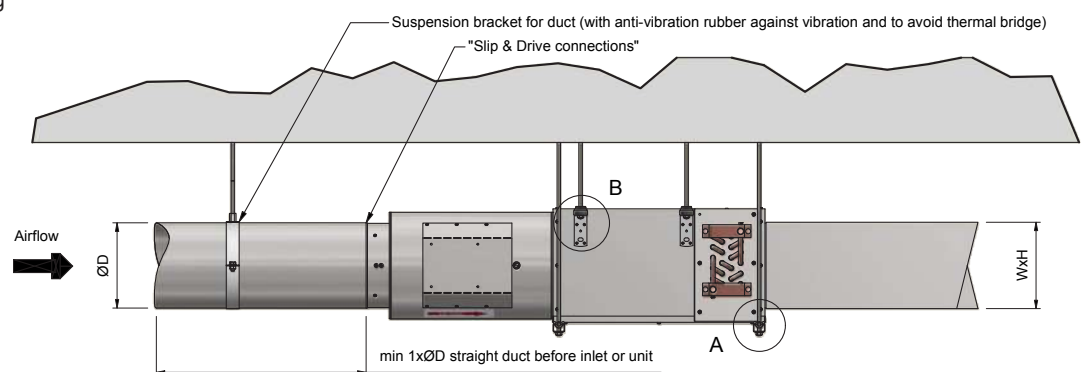
This installation method:

1. Shall prevent the body of the VAV terminal from high mechanical tension, which could damage the construction and performance of the terminal.
2. Shall prevent torsion on the VAV terminals, which could cause malfunction of the damper blades.
3. Provides some flexibility to the final location of the VAV terminals.
4. Use at least 1x diameter straight duct length before the VAV inlet.
5. Additional manual volume control dampers (VCD's) before the inlet are not required / recommended!!

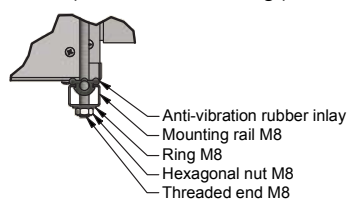
6. All connections shall be thermally isolated.
7. Pressure sensing tubes of Flo-Cross® airflow sensor shall not be "kinked" or otherwise obstructed by the external duct insulation.

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

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



View A ( Standard mounting )



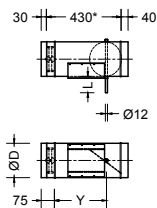
View B ( Optional mounting )



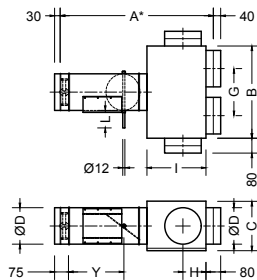
Mounting drawing type NBOG...

# Circular VAV-terminals

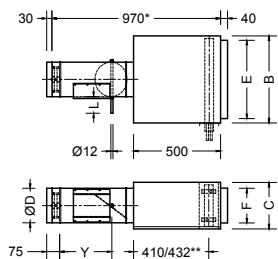
## Dimensions type NA



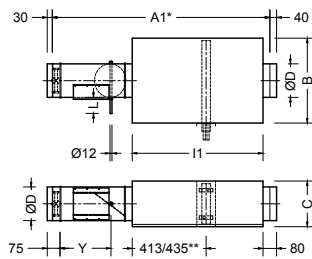
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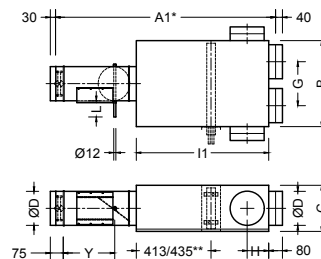
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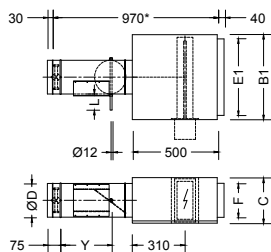
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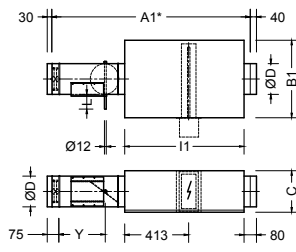
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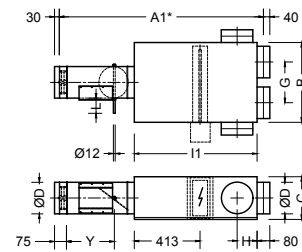
Type NAOJ.OB



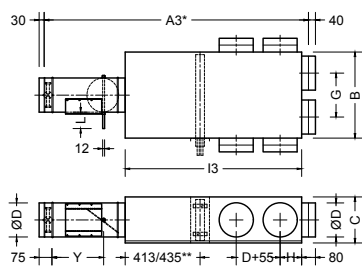
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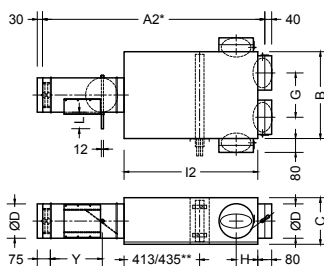
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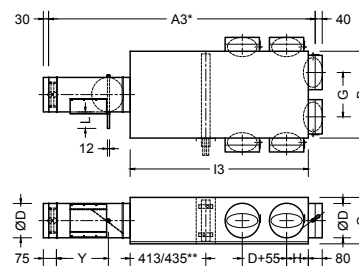
Type NAOQ.OB



Type NA.J... - 3006



Type NA.J... - 3010



Type NA.J... - 3016

All dimensions in mm

\* = Installed length.

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

# Circular VAV-terminals

## Dimensions type NA

Type

NA  
NB



Type NAOBOOB



Type NAOJ.OB



Type NAOCOBB



Type NAON.OB

### Dimensions NA terminals

| Model | 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  | 175  | 200  | 250  | 250  |
| I     | 270  | 270  | 270  | 320  | 370  | 420  | 480  | 520  |
| I1    | 720  | 720  | 720  | 770  | 820  | 870  | 930  | 970  |
| Y     | 310  | 310  | 310  | 300  | 285  | 260  | 245  | 235  |
| L     | 95   | 95   | 95   | 95   | 95   | 95   | 95   | 105  |

All dimensions in mm

\* = Installed length.

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

### Kv values

| Model         | 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 |

$$Flow = Kv \times \sqrt{\Delta p_{fc}}$$

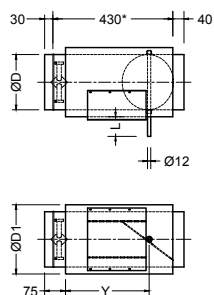
$\Delta p_{fc}$  = Flo-Cross® signal

If  $\Delta p_{fc}$  = 30 Pa and VAV-size = 160

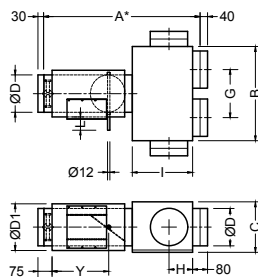
$$Flow = 15.0 \times \sqrt{30} = 82 \text{ l/s}$$

# Circular VAV-terminals

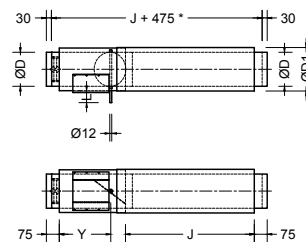
## Dimensions type NB



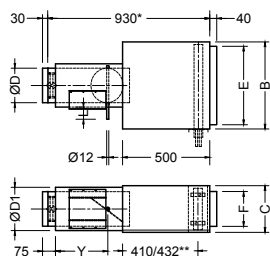
Type NBOBOOB



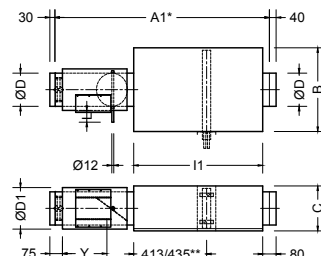
Type NBOCOOB



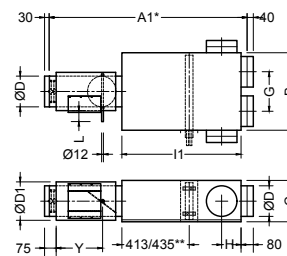
Type NBOEOOB / NBOEORB



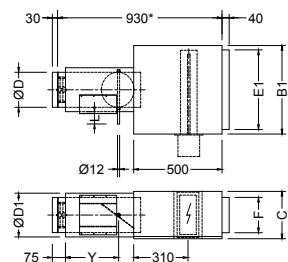
Type NBOG.OB



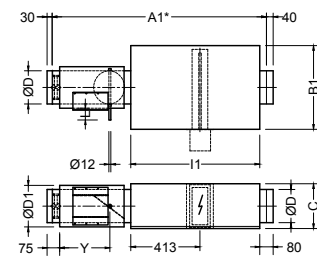
Type NBOH.OB



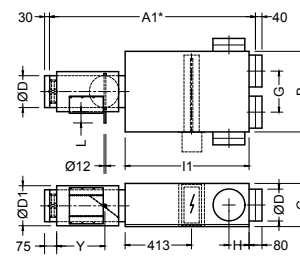
Type NBOJ.OB



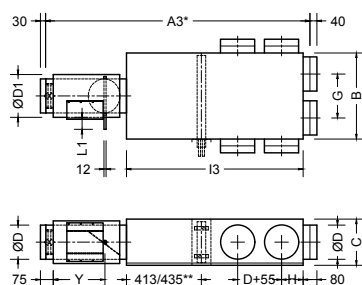
Type NBON.OB



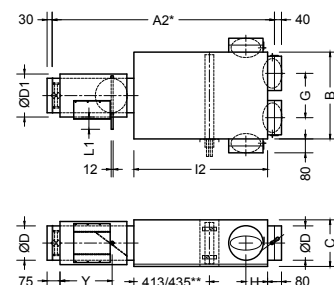
Type NBOP.OB



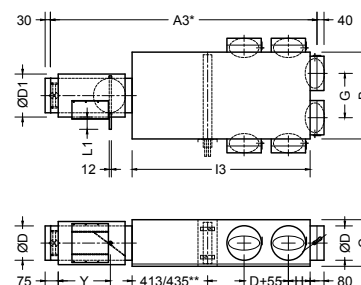
Type NBOQ.OB



Type NB.J... - 3006



Type NB.J... - 3010



Type NB.J... - 3016

All dimensions in mm

\* = Installed length.

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





Type NBOBOOB



Type NBOJ.OB



Type NBOCOOB



Type NBOEOOB

## Dimensions NB terminals

| Model | 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  |
| ØD1   | 150  | 180  | 200  | 250  | 300  | 355  | 400  | 450  |
| 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  | 175  | 200  | 250  | 250  |
| I     | 270  | 270  | 270  | 320  | 370  | 420  | 480  | 520  |
| I1    | 720  | 720  | 720  | 770  | 820  | 870  | 930  | 970  |
| J     | 600  | 600  | 600  | 750  | 750  | 900  | 900  | 900  |
| Y     | 310  | 310  | 310  | 300  | 285  | 260  | 245  | 235  |
| L     | 70   | 67,5 | 75   | 70   | 70   | 75   | 72,5 | 80   |

All dimensions in mm

\* = Installed length.

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

## Kv values

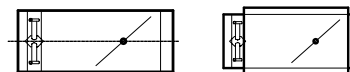
| Model         | 100 | 125 | 160  | 200  | 250  | 315  | 355  | 400  |
|---------------|-----|-----|------|------|------|------|------|------|
| Kv (l/s / Pa) | 5,5 | 8,5 | 15,0 | 24,9 | 35,4 | 58,9 | 74,3 | 92,6 |

$$\text{Flow} = \text{Kv} \times \sqrt{\Delta p_{fc}}$$

 $\Delta p_{fc}$  = Flo-Cross® signalIf  $\Delta p_{fc} = 30 \text{ Pa}$  en VAV-size = 160

$$\text{Flow} = 15.0 \times \sqrt{30} = 82 \text{ l/s}$$

Type NAOBOOB (single wall)  
NBOBOOB (double wall)



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

| Model |                  |            |      |      | Δ p = 125 Pa                       |        |        |        |         |         |         |       |    |    |        |        |        |         |         |         |       |    |                            |        |        |        |         |         |         |       |    |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|-------|------------------|------------|------|------|------------------------------------|--------|--------|--------|---------|---------|---------|-------|----|----|--------|--------|--------|---------|---------|---------|-------|----|----------------------------|--------|--------|--------|---------|---------|---------|-------|----|------------------------------------|--|--|--|--|--|--|--|--|-----------|--|--|--|--|--|--|--|--|
|       | data refering to |            |      |      | discharge sound                    |        |        |        |         |         |         |       |    |    |        |        |        |         |         |         |       |    | radiated sound single wall |        |        |        |         |         |         |       |    | radiated sound double wall         |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | inlet spigot     |            |      |      | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        |         |         |         |       |    |    |        |        |        |         |         |         |       |    | Lp values                  |        |        |        |         |         |         |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |  |  |  |  |  |  |  |  | Lp values |  |  |  |  |  |  |  |  |
|       | velocity         | air volume |      |      | min. Δ<br>p <sub>s</sub>           | 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  |                                    | m³/h   | Pa     | dB     |         |         |         |       |    |    | dB     |        |        |         |         |         |       |    |                            | dB     |        |        |         |         |         |       |    |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 100   | 2                | 15         | 31   | 53   | 2                                  | 43     | 44     | 40     | 38      | 34      | 22      | --    | -- | -- | 19     | -      | 19     | 20      | 23      | 21      | --    | -- | --                         | -      | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 29         | 62   | 106  | 7                                  | 49     | 50     | 46     | 44      | 40      | 29      | 23    | -- | -- | 26     | 23     | 26     | 27      | 30      | 28      | --    | -- | --                         | 22     | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 44         | 94   | 160  | 17                                 | 53     | 55     | 51     | 48      | 44      | 34      | 28    | 21 | 24 | 30     | 27     | 30     | 31      | 34      | 32      | --    | -- | --                         | 26     | 20     | -      | -       | -       | 18      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 59         | 125  | 213  | 30                                 | 57     | 58     | 54     | 52      | 49      | 39      | 31    | 26 | 28 | 33     | 30     | 33     | 34      | 37      | 35      | --    | -- | --                         | 29     | 23     | 19     | 19      | 19      | 21      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 74         | 156  | 266  | 47                                 | 59     | 61     | 58     | 55      | 52      | 43      | 34    | 29 | 31 | 35     | 32     | 35     | 36      | 39      | 37      | --    | -- | --                         | 32     | 26     | 22     | 21      | 21      | 23      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 89               | 188        | 320  | 68   | 62                                 | 64     | 61     | 58     | 56      | 47      | 37      | 32    | 34 | 37 | 34     | 37     | 38     | 41      | 39      | 21      | --    | -- | 33                         | 27     | 23     | 23     | 23      | 25      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 125   | 2                | 23         | 49   | 84   | 2                                  | 40     | 43     | 40     | 39      | 34      | 25      | --    | -- | -- | 28     | 24     | 25     | 22      | 23      | 17      | --    | -- | --                         | -      | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 47         | 99   | 168  | 7                                  | 47     | 49     | 46     | 45      | 40      | 31      | 22    | -- | -- | 35     | 31     | 32     | 29      | 30      | 24      | --    | -- | --                         | 23     | 18     | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 70         | 149  | 253  | 16                                 | 52     | 54     | 51     | 49      | 44      | 36      | 27    | 21 | 23 | 39     | 35     | 36     | 33      | 34      | 28      | --    | -- | --                         | 27     | 22     | 19     | 18      | -       | 19      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 94         | 198  | 337  | 28                                 | 56     | 58     | 55     | 53      | 48      | 40      | 31    | 25 | 28 | 42     | 38     | 38     | 35      | 37      | 31      | 21    | -- | --                         | 30     | 25     | 22     | 21      | 20      | 22      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 117        | 248  | 421  | 44                                 | 59     | 61     | 59     | 56      | 51      | 44      | 34    | 29 | 31 | 44     | 40     | 41     | 38      | 39      | 33      | 23    | -- | --                         | 33     | 28     | 25     | 23      | 22      | 24      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 140              | 296        | 504  | 63   | 62                                 | 64     | 62     | 59     | 54      | 48      | 37      | 33    | 34 | 46 | 42     | 42     | 39     | 41      | 35      | 25      | --    | -- | 34                         | 29     | 26     | 25     | 24      | 24      | 26      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 160   | 2                | 39         | 82   | 139  | 2                                  | 39     | 41     | 40     | 38      | 37      | 32      | --    | -- | -- | 28     | 24     | 25     | 22      | 23      | 18      | --    | -- | --                         | 18     | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 78         | 164  | 279  | 7                                  | 47     | 48     | 46     | 44      | 41      | 36      | 22    | -- | -- | 35     | 31     | 32     | 29      | 30      | 25      | --    | -- | --                         | 25     | 20     | 19     | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 116        | 246  | 418  | 15                                 | 52     | 52     | 50     | 49      | 44      | 39      | 26    | -- | 22 | 39     | 35     | 36     | 33      | 34      | 29      | --    | -- | --                         | 29     | 24     | 23     | 20      | 18      | 20      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 155        | 328  | 558  | 26                                 | 56     | 56     | 54     | 52      | 48      | 42      | 30    | 24 | 26 | 42     | 38     | 38     | 35      | 37      | 31      | 21    | -- | --                         | 32     | 27     | 26     | 23      | 21      | 23      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 194        | 410  | 697  | 41                                 | 60     | 60     | 58     | 56      | 51      | 45      | 34    | 28 | 30 | 44     | 40     | 41     | 38      | 39      | 34      | 23    | -- | --                         | 34     | 29     | 28     | 25      | 23      | 25      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 232              | 491        | 835  | 59   | 63                                 | 63     | 61     | 59     | 54      | 48      | 37      | 31    | 33 | 46 | 42     | 42     | 39     | 41      | 35      | 25      | --    | -- | 36                         | 31     | 30     | 27     | 25      | 27      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 200   | 2                | 61         | 129  | 219  | 2                                  | 39     | 34     | 37     | 34      | 30      | 23      | --    | -- | -- | 29     | 24     | 24     | 23      | 23      | 18      | --    | -- | --                         | 19     | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 122        | 258  | 439  | 6                                  | 48     | 44     | 46     | 42      | 37      | 31      | 20    | -- | -- | 36     | 31     | 31     | 29      | 30      | 25      | --    | -- | --                         | 26     | 22     | 21     | 18      | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 183        | 387  | 658  | 14                                 | 54     | 51     | 52     | 47      | 42      | 36      | 26    | -- | -- | 40     | 35     | 35     | 33      | 34      | 29      | --    | -- | --                         | 30     | 26     | 25     | 22      | 20      | 21      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 244        | 516  | 878  | 25                                 | 58     | 55     | 56     | 51      | 46      | 40      | 31    | 22 | 25 | 43     | 38     | 38     | 36      | 37      | 31      | 21    | -- | --                         | 33     | 29     | 28     | 25      | 22      | 24      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 305        | 645  | 1097 | 39                                 | 61     | 59     | 60     | 54      | 50      | 43      | 34    | 27 | 29 | 45     | 40     | 40     | 38      | 39      | 34      | 23    | -- | --                         | 35     | 31     | 30     | 27      | 25      | 26      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 366              | 775        | 1318 | 56   | 64                                 | 63     | 63     | 57     | 53      | 46      | 38      | 31    | 33 | 47 | 42     | 42     | 40     | 41      | 35      | 25      | --    | -- | 37                         | 33     | 32     | 29     | 27      | 28      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 250   | 2                | 96         | 203  | 345  | 1                                  | 41     | 43     | 42     | 39      | 34      | 30      | --    | -- | -- | 29     | 24     | 24     | 23      | 23      | 18      | --    | -- | --                         | 19     | -      | -      | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 192        | 406  | 690  | 6                                  | 50     | 51     | 50     | 45      | 40      | 35      | 25    | -- | 20 | 36     | 31     | 31     | 29      | 30      | 25      | --    | -- | --                         | 26     | 21     | 21     | 18      | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 288        | 609  | 1035 | 13                                 | 56     | 56     | 55     | 50      | 44      | 39      | 30    | 23 | 26 | 40     | 35     | 35     | 33      | 34      | 29      | --    | -- | --                         | 30     | 25     | 25     | 22      | 20      | 21      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 383        | 812  | 1380 | 23                                 | 60     | 60     | 59     | 53      | 47      | 43      | 34    | 28 | 30 | 43     | 38     | 38     | 36      | 37      | 31      | 21    | -- | --                         | 33     | 28     | 28     | 25      | 23      | 24      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 479        | 1015 | 1725 | 36                                 | 63     | 63     | 62     | 56      | 50      | 45      | 37    | 32 | 34 | 45     | 40     | 40     | 38      | 39      | 34      | 23    | -- | --                         | 35     | 31     | 31     | 27      | 25      | 26      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 575              | 1218       | 2070 | 52   | 66                                 | 66     | 65     | 59     | 53      | 48      | 40      | 35    | 37 | 47 | 42     | 42     | 40     | 41      | 35      | 25      | --    | -- | 37                         | 32     | 32     | 29     | 27      | 28      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 315   | 2                | 153        | 324  | 550  | 1                                  | 42     | 45     | 41     | 41      | 38      | 33      | --    | -- | -- | 30     | 24     | 24     | 23      | 23      | 19      | --    | -- | --                         | 21     | 18     | 18     | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 306        | 648  | 1101 | 5                                  | 52     | 52     | 48     | 47      | 43      | 38      | 25    | -- | 21 | 37     | 31     | 31     | 30      | 30      | 26      | --    | -- | --                         | 28     | 25     | 25     | 22      | 18      | 19      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 459        | 971  | 1651 | 12                                 | 58     | 57     | 54     | 52      | 48      | 42      | 31    | 24 | 26 | 41     | 35     | 35     | 34      | 34      | 30      | --    | -- | --                         | 32     | 29     | 29     | 26      | 22      | 23      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 612        | 1295 | 2202 | 22                                 | 63     | 61     | 58     | 56      | 52      | 46      | 35    | 29 | 31 | 44     | 38     | 38     | 36      | 37      | 32      | 21    | -- | --                         | 35     | 32     | 32     | 29      | 25      | 26      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 764        | 1619 | 2752 | 34                                 | 67     | 64     | 62     | 59      | 55      | 50      | 39    | 34 | 35 | 46     | 40     | 40     | 39      | 39      | 35      | 23    | -- | --                         | 38     | 34     | 34     | 31      | 27      | 28      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 917              | 1942       | 3301 | 49   | 71                                 | 67     | 65     | 62     | 59      | 53      | 43      | 38    | 39 | 48 | 42     | 42     | 40     | 41      | 36      | 25      | --    | -- | 39                         | 36     | 36     | 33     | 29      | 30      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 355   | 2                | 195        | 412  | 701  | 1                                  | 42     | 52     | 45     | 45      | 40      | 38      | 23    | -- | 21 | 30     | 24     | 24     | 23      | 23      | 19      | --    | -- | --                         | 22     | 19     | 19     | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 389        | 824  | 1401 | 5                                  | 53     | 56     | 51     | 50      | 43      | 42      | 29    | 23 | 26 | 37     | 31     | 31     | 30      | 30      | 26      | --    | -- | --                         | 29     | 26     | 26     | 23      | 18      | 20      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 584        | 1236 | 2102 | 12                                 | 59     | 60     | 56     | 54      | 46      | 45      | 33    | 28 | 30 | 41     | 35     | 35     | 34      | 34      | 30      | --    | -- | --                         | 33     | 30     | 30     | 27      | 23      | 24      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 779        | 1649 | 2803 | 21                                 | 64     | 63     | 60     | 57      | 50      | 48      | 37    | 31 | 33 | 44     | 38     | 38     | 37      | 37      | 33      | 21    | -- | --                         | 36     | 33     | 33     | 30      | 25      | 27      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 973        | 2061 | 3503 | 33                                 | 68     | 66     | 64     | 61      | 53      | 52      | 41    | 35 | 37 | 46     | 40     | 40     | 39      | 39      | 35      | 23    | -- | --                         | 38     | 35     | 35     | 32      | 28      | 29      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 1168             | 2473       | 4205 | 47   | 72                                 | 69     | 67     | 64     | 56      | 55      | 44      | 40    | 40 | 48 | 42     | 42     | 41     | 41      | 37      | 25      | --    | -- | 40                         | 37     | 37     | 34     | 30      | 31      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 400   | 2                | 248        | 524  | 891  | 1                                  | 43     | 54     | 46     | 46      | 42      | 36      | 25    | 21 | 23 | 30     | 24     | 24     | 23      | 23      | 19      | --    | -- | --                         | 22     | 19     | 19     | -       | -       | -       | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 4                | 495        | 1049 | 1783 | 5                                  | 54     | 58     | 52     | 51      | 45      | 40      | 30    | 26 | 28 | 37     | 31     | 31     | 30      | 30      | 26      | --    | -- | --                         | 29     | 26     | 26     | 24      | 19      | 20      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 6                | 743        | 1573 | 2674 | 11                                 | 60     | 62     | 57     | 55      | 48      | 43      | 35    | 30 | 32 | 41     | 35     | 35     | 34      | 34      | 30      | --    | -- | --                         | 33     | 30     | 30     | 28      | 23      | 24      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 8                | 990        | 2097 | 3565 | 20                                 | 65     | 65     | 61     | 58      | 52      | 46      | 39    | 34 | 35 | 44     | 38     | 37     | 37      | 37      | 33      | 21    | -- | --                         | 36     | 33     | 33     | 31      | 26      | 27      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
|       | 10               | 1238       | 2621 | 4456 | 32                                 | 69     | 68     | 65     | 62      | 55      | 50      | 42    | 37 | 39 | 46     | 40     | 40     | 39      | 39      | 35      | 23    | -- | --                         | 39     | 36     | 36     | 33      | 28      | 29      | --    | -- | --                                 |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |
| 12    | 1485             | 3145       | 5346 | 46   | 73                                 | 71     | 68     | 65     | 58      | 53      | 45      | 41    | 42 | 48 | 42     | 41     | 41     | 41      | 37      | 25      | --    | -- | 40                         | 37     | 37     | 35     | 30      | 31      | --      | --    | -- |                                    |  |  |  |  |  |  |  |  |           |  |  |  |  |  |  |  |  |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards.
- L<sub>w</sub> 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

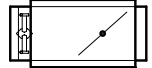
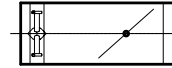
- with the assumptions as mentioned in table 1 for ceiling plenum and suspended ceiling absorption.
- L<sub>p</sub> values are including a room absorption of 10 dB/Oct.
- dB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "--".
- $\Delta p_s$  is static pressure 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 |

## Sound data

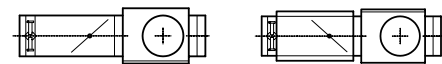
Type NAOBOOB (single wall)  
NBOBOOB (double wall)



Sound data  $\Delta p = 250 \text{ Pa}$

| Model |                   |            |      |      | Δ p = 250 Pa                       |                   |        |        |         |         |           |       |    |                                    |        |        |        |         |         |           |       |    |                                    |        |        |        |         |         |           |       |    |    |    |
|-------|-------------------|------------|------|------|------------------------------------|-------------------|--------|--------|---------|---------|-----------|-------|----|------------------------------------|--------|--------|--------|---------|---------|-----------|-------|----|------------------------------------|--------|--------|--------|---------|---------|-----------|-------|----|----|----|
|       | data referring to |            |      |      | discharge sound                    |                   |        |        |         |         |           |       |    | radiated sound single wall         |        |        |        |         |         |           |       |    | radiated sound double wall         |        |        |        |         |         |           |       |    |    |    |
|       | inlet spigot      |            |      |      | L <sub>w</sub> in dB/Oct. (re 1pW) |                   |        |        |         |         | Lp values |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        |         |         | Lp values |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        |         |         | Lp values |       |    |    |    |
|       | velocity          | air volume |      |      | min. Δ<br>P <sub>s</sub><br>Pa     | 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                                  | 45                | 48     | 45     | 43      | 40      | 29        | 21    | -- | --                                 | 26     | 23     | 26     | 27      | 30      | 28        | --    | -- | --                                 | 21     | -      | -      | -       | -       | -         | --    | -- | -- |    |
|       | 4                 | 29         | 62   | 106  | 7                                  | 51                | 53     | 51     | 48      | 45      | 35        | 27    | 20 | 23                                 | 33     | 30     | 33     | 34      | 37      | 35        | --    | -- | --                                 | 28     | 22     | 18     | -       | -       | 18        | --    | -- | -- |    |
|       | 6                 | 44         | 94   | 160  | 17                                 | 55                | 57     | 54     | 52      | 49      | 40        | 30    | 25 | 27                                 | 37     | 34     | 37     | 38      | 41      | 39        | 21    | -- | --                                 | 32     | 26     | 22     | 20      | 20      | 22        | --    | -- | -- |    |
|       | 8                 | 59         | 125  | 213  | 30                                 | 58                | 60     | 57     | 55      | 53      | 44        | 33    | 28 | 30                                 | 40     | 37     | 40     | 41      | 44      | 42        | 24    | -- | --                                 | 35     | 29     | 25     | 23      | 23      | 25        | --    | -- | -- |    |
|       | 10                | 74         | 156  | 266  | 47                                 | 60                | 63     | 60     | 57      | 56      | 47        | 36    | 31 | 33                                 | 42     | 39     | 42     | 43      | 46      | 44        | 26    | 22 | 24                                 | 38     | 32     | 28     | 25      | 25      | 27        | --    | -- | -- |    |
| 12    | 89                | 188        | 320  | 68   | 62                                 | 65                | 63     | 60     | 58      | 50      | 38        | 34    | 36 | 44                                 | 41     | 44     | 45     | 48      | 46      | 28        | 24    | 26 | 39                                 | 33     | 29     | 27     | 27      | 29      | --        | --    | -- |    |    |
| 125   | 2                 | 23         | 49   | 84   | 2                                  | 43                | 47     | 46     | 43      | 40      | 33        | 20    | -- | --                                 | 35     | 31     | 31     | 28      | 30      | 24        | --    | -- | --                                 | 22     | 17     | -      | -       | -       | -         | --    | -- | -- |    |
|       | 4                 | 47         | 99   | 168  | 7                                  | 50                | 53     | 51     | 49      | 45      | 38        | 26    | -- | 23                                 | 41     | 38     | 38     | 35      | 37      | 31        | 20    | -- | --                                 | 29     | 24     | 21     | 18      | -       | 19        | --    | -- | -- |    |
|       | 6                 | 70         | 149  | 253  | 16                                 | 54                | 57     | 55     | 53      | 48      | 41        | 30    | 25 | 27                                 | 45     | 42     | 42     | 39      | 41      | 35        | 24    | -- | --                                 | 33     | 28     | 25     | 22      | 21      | 23        | --    | -- | -- |    |
|       | 8                 | 94         | 198  | 337  | 28                                 | 58                | 60     | 58     | 56      | 51      | 45        | 34    | 28 | 31                                 | 48     | 45     | 45     | 42      | 44      | 38        | 27    | -- | --                                 | 36     | 31     | 28     | 25      | 24      | 26        | --    | -- | -- |    |
|       | 10                | 117        | 248  | 421  | 44                                 | 61                | 63     | 61     | 58      | 54      | 48        | 36    | 32 | 34                                 | 50     | 47     | 47     | 44      | 46      | 40        | 29    | 22 | 24                                 | 39     | 34     | 31     | 27      | 26      | 28        | --    | -- | -- |    |
| 12    | 140               | 296        | 504  | 63   | 63                                 | 66                | 64     | 61     | 57      | 51      | 39        | 35    | 36 | 52                                 | 49     | 49     | 46     | 48      | 42      | 31        | 24    | 26 | 40                                 | 35     | 32     | 29     | 28      | 30      | --        | --    | -- |    |    |
| 160   | 2                 | 39         | 82   | 139  | 2                                  | 42                | 47     | 46     | 44      | 43      | 40        | 20    | -- | --                                 | 35     | 31     | 31     | 28      | 30      | 24        | --    | -- | --                                 | 24     | 19     | 18     | -       | -       | -         | --    | -- | -- |    |
|       | 4                 | 78         | 164  | 279  | 7                                  | 50                | 53     | 52     | 50      | 47      | 43        | 26    | -- | 22                                 | 41     | 38     | 38     | 35      | 37      | 31        | 20    | -- | --                                 | 31     | 26     | 25     | 20      | 18      | 20        | --    | -- | -- |    |
|       | 6                 | 116        | 246  | 418  | 15                                 | 55                | 57     | 55     | 54      | 50      | 46        | 30    | 24 | 27                                 | 45     | 42     | 42     | 39      | 41      | 35        | 24    | -- | --                                 | 35     | 30     | 29     | 24      | 22      | 24        | --    | -- | -- |    |
|       | 8                 | 155        | 328  | 558  | 26                                 | 59                | 60     | 59     | 57      | 53      | 48        | 34    | 28 | 30                                 | 48     | 45     | 45     | 42      | 44      | 38        | 27    | -- | --                                 | 38     | 33     | 32     | 27      | 25      | 27        | --    | -- | -- |    |
|       | 10                | 194        | 410  | 697  | 41                                 | 62                | 63     | 61     | 59      | 55      | 50        | 37    | 31 | 33                                 | 50     | 47     | 47     | 44      | 46      | 40        | 29    | 22 | 24                                 | 40     | 35     | 34     | 29      | 27      | 29        | --    | -- | -- |    |
| 12    | 232               | 491        | 835  | 59   | 65                                 | 66                | 64     | 62     | 57      | 52      | 39        | 34    | 36 | 52                                 | 49     | 49     | 46     | 48      | 42      | 31        | 24    | 26 | 42                                 | 37     | 36     | 31     | 29      | 31      | --        | --    | -- |    |    |
| 200   | 2                 | 61         | 129  | 219  | 2                                  | 43                | 38     | 41     | 39      | 36      | 30        | --    | -- | --                                 | 36     | 31     | 31     | 29      | 30      | 24        | --    | -- | --                                 | 25     | 21     | 20     | -       | -       | -         | --    | -- | -- |    |
|       | 4                 | 122        | 258  | 439  | 6                                  | 52                | 49     | 50     | 47      | 43      | 37        | 24    | -- | --                                 | 43     | 38     | 38     | 36      | 37      | 31        | 21    | -- | --                                 | 32     | 28     | 27     | 22      | 19      | 21        | --    | -- | -- |    |
|       | 6                 | 183        | 387  | 658  | 14                                 | 57                | 55     | 56     | 51      | 47      | 42        | 30    | 22 | 24                                 | 47     | 42     | 42     | 40      | 41      | 35        | 25    | -- | --                                 | 36     | 32     | 31     | 26      | 23      | 25        | --    | -- | -- |    |
|       | 8                 | 244        | 516  | 878  | 25                                 | 61                | 59     | 60     | 55      | 51      | 45        | 34    | 27 | 29                                 | 50     | 45     | 45     | 43      | 44      | 38        | 28    | -- | --                                 | 39     | 35     | 34     | 29      | 26      | 28        | --    | -- | -- |    |
|       | 10                | 305        | 645  | 1097 | 39                                 | 64                | 63     | 63     | 58      | 54      | 48        | 38    | 31 | 33                                 | 52     | 47     | 47     | 45      | 46      | 40        | 30    | 22 | 24                                 | 41     | 37     | 36     | 31      | 29      | 30        | --    | -- | -- |    |
| 12    | 366               | 775        | 1318 | 56   | 67                                 | 66                | 66     | 60     | 56      | 51      | 40        | 35    | 37 | 54                                 | 49     | 49     | 47     | 48      | 42      | 32        | 24    | 26 | 43                                 | 39     | 38     | 33     | 30      | 32      | 20        | --    | -- | -- |    |
| 250   | 2                 | 96         | 203  | 345  | 1                                  | 44                | 47     | 46     | 44      | 41      | 37        | 21    | -- | --                                 | 36     | 31     | 31     | 29      | 30      | 24        | --    | -- | --                                 | 25     | 20     | 20     | -       | -       | -         | --    | -- | -- |    |
|       | 4                 | 192        | 406  | 690  | 6                                  | 53                | 55     | 54     | 50      | 46      | 42        | 29    | 23 | 25                                 | 43     | 38     | 38     | 36      | 37      | 31        | 21    | -- | --                                 | 32     | 27     | 27     | 22      | 20      | 21        | --    | -- | -- |    |
|       | 6                 | 288        | 609  | 1035 | 13                                 | 59                | 60     | 59     | 54      | 50      | 46        | 34    | 28 | 31                                 | 47     | 42     | 42     | 40      | 41      | 35        | 25    | -- | --                                 | 36     | 31     | 31     | 26      | 24      | 25        | --    | -- | -- |    |
|       | 8                 | 383        | 812  | 1380 | 23                                 | 63                | 64     | 62     | 57      | 53      | 48        | 38    | 33 | 34                                 | 50     | 45     | 45     | 43      | 44      | 38        | 28    | -- | --                                 | 39     | 34     | 34     | 29      | 27      | 28        | --    | -- | -- |    |
|       | 10                | 479        | 1015 | 1725 | 36                                 | 66                | 67     | 65     | 60      | 55      | 51        | 41    | 36 | 38                                 | 52     | 47     | 47     | 45      | 46      | 40        | 30    | 22 | 24                                 | 41     | 37     | 37     | 31      | 29      | 30        | --    | -- | -- |    |
| 12    | 575               | 1218       | 2070 | 52   | 69                                 | 70                | 68     | 62     | 57      | 53      | 43        | 39    | 40 | 54                                 | 49     | 49     | 47     | 48      | 42      | 32        | 24    | 26 | 43                                 | 38     | 38     | 33     | 31      | 32      | 20        | --    | -- | -- |    |
| 315   | 2                 | 153        | 324  | 550  | 1                                  | 45                | 50     | 45     | 46      | 45      | 40        | 23    | -- | --                                 | 37     | 31     | 31     | 29      | 30      | 25        | --    | -- | --                                 | 27     | 24     | 24     | 19      | -       | -         | --    | -- | -- |    |
|       | 4                 | 306        | 648  | 1101 | 5                                  | 54                | 56     | 52     | 52      | 50      | 44        | 29    | 23 | 26                                 | 43     | 37     | 38     | 36      | 36      | 32        | 21    | -- | --                                 | 34     | 31     | 31     | 26      | 22      | 23        | --    | -- | -- |    |
|       | 6                 | 459        | 971  | 1651 | 12                                 | 60                | 60     | 57     | 56      | 53      | 48        | 34    | 28 | 30                                 | 47     | 41     | 42     | 40      | 40      | 36        | 25    | -- | --                                 | 38     | 35     | 35     | 30      | 26      | 27        | --    | -- | -- |    |
|       | 8                 | 612        | 1295 | 2202 | 22                                 | 65                | 64     | 61     | 59      | 56      | 51        | 38    | 32 | 34                                 | 50     | 44     | 44     | 43      | 43      | 39        | 27    | -- | --                                 | 41     | 38     | 38     | 33      | 29      | 30        | --    | -- | -- |    |
|       | 10                | 764        | 1619 | 2752 | 34                                 | 69                | 67     | 64     | 62      | 59      | 54        | 41    | 36 | 37                                 | 52     | 46     | 47     | 45      | 45      | 41        | 30    | 21 | 23                                 | 44     | 40     | 40     | 35      | 31      | 32        | 22    | -- | -- | -- |
| 12    | 917               | 1942       | 3301 | 49   | 72                                 | 69                | 67     | 65     | 61      | 57      | 44        | 40    | 40 | 54                                 | 48     | 48     | 47     | 47      | 43      | 31        | 23    | 25 | 45                                 | 42     | 42     | 37     | 33      | 34      | 24        | --    | -- | -- |    |
| 355   | 2                 | 195        | 412  | 701  | 1                                  | 45                | 57     | 50     | 51      | 47      | 47        | 29    | 24 | 27                                 | 37     | 31     | 31     | 30      | 30      | 26        | --    | -- | --                                 | 28     | 25     | 25     | 20      | -       | -         | --    | -- | -- |    |
|       | 4                 | 389        | 824  | 1401 | 5                                  | 55                | 61     | 56     | 55      | 50      | 49        | 33    | 29 | 31                                 | 44     | 38     | 38     | 37      | 37      | 33        | 21    | -- | --                                 | 35     | 32     | 32     | 27      | 22      | 24        | --    | -- | -- |    |
|       | 6                 | 584        | 1236 | 2102 | 12                                 | 61                | 64     | 60     | 58      | 52      | 51        | 37    | 32 | 34                                 | 48     | 42     | 42     | 41      | 41      | 37        | 25    | -- | --                                 | 39     | 36     | 36     | 31      | 26      | 28        | --    | -- | -- |    |
|       | 8                 | 779        | 1649 | 2803 | 21                                 | 66                | 66     | 63     | 61      | 55      | 54        | 40    | 35 | 37                                 | 50     | 45     | 45     | 44      | 44      | 40        | 28    | -- | --                                 | 42     | 39     | 39     | 34      | 29      | 31        | 20    | -- | -- | -- |
|       | 10                | 973        | 2061 | 3503 | 33                                 | 70                | 69     | 66     | 64      | 57      | 56        | 43    | 38 | 39                                 | 53     | 47     | 47     | 46      | 46      | 42        | 30    | 22 | 24                                 | 44     | 41     | 41     | 36      | 32      | 33        | 22    | -- | -- | -- |
| 12    | 1168              | 2473       | 4205 | 47   | 73                                 | 71                | 69     | 66     | 59      | 59      | 46        | 42    | 42 | 54                                 | 49     | 49     | 48     | 48      | 44      | 32        | 24    | 26 | 46                                 | 43     | 43     | 38     | 33      | 35      | 24        | --    | -- | -- |    |
| 400   | 2                 | 248        | 524  | 891  | 1                                  | 46                | 59     | 51     | 52      | 49      | 45        | 30    | 27 | 29                                 | 37     | 31     | 30     | 30      | 30      | 26        | --    | -- | --                                 | 28     | 25     | 25     | 21      | -       | 17        | --    | -- | -- |    |
|       | 4                 | 495        | 1049 | 1783 | 5                                  | 56                | 63     | 57     | 56      | 52      | 47        | 35    | 31 | 33                                 | 44     | 37     | 37     | 37      | 36      | 33        | 21    | -- | --                                 | 35     | 32     | 32     | 28      | 23      | 24        | --    | -- | -- |    |
|       | 6                 | 743        | 1573 | 2674 | 11                                 | 62                | 66     | 61     | 59      | 54      | 49        | 38    | 35 | 36                                 | 48     | 41     | 41     | 41      | 40      | 37        | 25    | -- | --                                 | 39     | 36     | 36     | 32      | 27      | 28        | --    | -- | -- |    |
|       | 8                 | 990        | 2097 | 3565 | 20                                 | 67                | 68     | 64     | 62      | 57      | 52        | 41    | 38 | 39                                 | 50     | 44     | 44     | 43      | 43      | 39        | 27    | -- | --                                 | 42     | 39     | 39     | 35      | 30      | 31        | 21    | -- | -- | -- |
|       | 10                | 1238       | 2621 | 4456 | 32                                 | 71                | 71     | 67     | 65      | 59      | 54        | 44    | 40 | 42                                 | 53     | 46     | 46     | 46      | 45      | 42        | 30    | 21 | 23                                 | 45     | 42     | 42     | 37      | 32      | 33        | 23    | -- | -- | -- |
| 12    | 1485              | 3145       | 5346 | 46   | 74                                 | 73                | 70     | 67     | 61      | 57      | 47        | 43    | 44 | 54                                 | 48     | 48     | 47     | 47      | 43      | 31        | 23    | 25 | 46                                 | 43     | 43     | 39     | 34      | 35      | 25        | --    | -- | -- |    |

Type **NAOCCOB** (single wall)  
**NBOCCOB** (double wall)

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

| Model |                   |            |      |      | Δ p = 125 Pa                       |        |        |        |         |         |         |       |    |    |        |                            |        |         |                                    |         |       |    |    |        |                            |        |         |                                    |         |       |    |    |   |           |  |  |
|-------|-------------------|------------|------|------|------------------------------------|--------|--------|--------|---------|---------|---------|-------|----|----|--------|----------------------------|--------|---------|------------------------------------|---------|-------|----|----|--------|----------------------------|--------|---------|------------------------------------|---------|-------|----|----|---|-----------|--|--|
|       | data referring to |            |      |      | discharge sound                    |        |        |        |         |         |         |       |    |    |        | radiated sound single wall |        |         |                                    |         |       |    |    |        | radiated sound double wall |        |         |                                    |         |       |    |    |   |           |  |  |
|       | inlet spigot      |            |      |      | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        |         |         |         |       |    |    |        | Lp values                  |        |         | L <sub>w</sub> in dB/Oct. (re 1pW) |         |       |    |    |        | Lp values                  |        |         | L <sub>w</sub> in dB/Oct. (re 1pW) |         |       |    |    |   | Lp values |  |  |
|       | velocity          | air volume |      |      | min. Δ<br>p <sub>s</sub>           | 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  |                                    | m³/h   | Pa     | dB     |         |         |         |       |    |    | dB     |                            |        |         |                                    |         |       |    |    | dB     |                            |        |         |                                    |         |       |    |    |   |           |  |  |
| 100   | 2                 | 15         | 31   | 53   | 2                                  | 34     | 32     | 22     | 18      | -       | -       | -     | -  | 19 | -      | 19                         | 20     | 23      | 21                                 | -       | -     | -  | -  | -      | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 29         | 62   | 106  | 10                                 | 40     | 38     | 28     | 24      | 18      | -       | -     | -  | 26 | 23     | 26                         | 27     | 30      | 28                                 | -       | -     | -  | -  | 22     | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 6                 | 44         | 94   | 160  | 22                                 | 44     | 43     | 33     | 28      | 22      | -       | -     | -  | 30 | 27     | 30                         | 31     | 34      | 32                                 | -       | -     | -  | -  | 26     | 20                         | -      | -       | -                                  | 18      | -     | -  | -  | - |           |  |  |
|       | 8                 | 59         | 125  | 213  | 38                                 | 48     | 46     | 36     | 32      | 27      | -       | -     | -  | 33 | 30     | 33                         | 34     | 37      | 35                                 | -       | -     | -  | -  | 29     | 23                         | 19     | 19      | 19                                 | 21      | -     | -  | -  | - |           |  |  |
|       | 10                | 74         | 156  | 266  | 60                                 | 50     | 49     | 40     | 35      | 30      | 19      | 23    | -  | 35 | 32     | 35                         | 36     | 39      | 37                                 | -       | -     | -  | -  | 32     | 26                         | 22     | 21      | 21                                 | 23      | -     | -  | -  | - |           |  |  |
|       | 12                | 89         | 188  | 320  | 86                                 | 53     | 52     | 43     | 38      | 34      | 23      | 25    | -  | 21 | 37     | 34                         | 37     | 38      | 41                                 | 39      | 21    | -  | -  | -      | 33                         | 27     | 23      | 23                                 | 23      | 25    | -  | -  | - | -         |  |  |
| 125   | 2                 | 23         | 49   | 84   | 2                                  | 31     | 31     | 22     | 19      | -       | -       | -     | -  | 28 | 24     | 25                         | 22     | 23      | 17                                 | -       | -     | -  | -  | -      | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 47         | 99   | 168  | 7                                  | 38     | 37     | 28     | 25      | 18      | -       | -     | -  | 35 | 31     | 32                         | 29     | 30      | 24                                 | -       | -     | -  | -  | 23     | 18                         | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 6                 | 70         | 149  | 253  | 17                                 | 43     | 42     | 33     | 29      | 22      | -       | -     | -  | 39 | 35     | 36                         | 33     | 34      | 28                                 | -       | -     | -  | -  | 27     | 22                         | 19     | 18      | -                                  | 19      | -     | -  | -  | - |           |  |  |
|       | 8                 | 94         | 198  | 337  | 30                                 | 47     | 46     | 37     | 33      | 26      | -       | -     | -  | 42 | 38     | 38                         | 35     | 37      | 31                                 | 21      | -     | -  | -  | 30     | 25                         | 22     | 21      | 20                                 | 22      | -     | -  | -  | - |           |  |  |
|       | 10                | 117        | 248  | 421  | 46                                 | 50     | 49     | 41     | 36      | 29      | 20      | 23    | -  | 44 | 40     | 41                         | 38     | 39      | 33                                 | 23      | -     | -  | -  | 33     | 28                         | 25     | 23      | 22                                 | 24      | -     | -  | -  | - |           |  |  |
|       | 12                | 140        | 296  | 504  | 67                                 | 53     | 52     | 44     | 39      | 32      | 24      | 26    | -  | 22 | 46     | 42                         | 42     | 39      | 41                                 | 35      | 25    | -  | -  | -      | 34                         | 29     | 26      | 25                                 | 24      | 26    | -  | -  | - | -         |  |  |
| 160   | 2                 | 39         | 82   | 139  | 2                                  | 30     | 29     | 22     | 18      | -       | -       | -     | -  | 28 | 24     | 25                         | 22     | 23      | 18                                 | -       | -     | -  | -  | 18     | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 78         | 164  | 279  | 6                                  | 38     | 36     | 28     | 24      | 19      | -       | -     | -  | 35 | 31     | 32                         | 29     | 30      | 25                                 | -       | -     | -  | -  | 25     | 20                         | 19     | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 6                 | 116        | 246  | 418  | 14                                 | 43     | 40     | 32     | 29      | 22      | -       | -     | -  | 39 | 35     | 36                         | 33     | 34      | 29                                 | -       | -     | -  | -  | 29     | 24                         | 23     | 20      | 18                                 | 20      | -     | -  | -  | - |           |  |  |
|       | 8                 | 155        | 328  | 558  | 26                                 | 47     | 44     | 36     | 32      | 26      | 18      | -     | -  | 42 | 38     | 38                         | 35     | 37      | 31                                 | 21      | -     | -  | -  | 32     | 27                         | 26     | 23      | 21                                 | 23      | -     | -  | -  | - |           |  |  |
|       | 10                | 194        | 410  | 697  | 40                                 | 51     | 48     | 40     | 36      | 29      | 21      | 22    | -  | 44 | 40     | 41                         | 38     | 39      | 34                                 | 23      | -     | -  | -  | 34     | 29                         | 28     | 25      | 23                                 | 25      | -     | -  | -  | - |           |  |  |
|       | 12                | 232        | 491  | 835  | 57                                 | 54     | 51     | 43     | 39      | 32      | 24      | 26    | -  | 20 | 46     | 42                         | 42     | 39      | 41                                 | 35      | 25    | -  | -  | -      | 36                         | 31     | 30      | 27                                 | 25      | 27    | -  | -  | - | -         |  |  |
| 200   | 2                 | 61         | 129  | 219  | 1                                  | 30     | 22     | 19     | -       | -       | -       | -     | -  | 29 | 24     | 24                         | 23     | 23      | 18                                 | -       | -     | -  | -  | 19     | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 122        | 258  | 439  | 6                                  | 39     | 32     | 28     | 22      | -       | -       | -     | -  | 36 | 31     | 31                         | 29     | 30      | 25                                 | -       | -     | -  | -  | 26     | 22                         | 21     | 18      | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 6                 | 183        | 387  | 658  | 13                                 | 45     | 39     | 34     | 27      | 20      | -       | -     | -  | 40 | 35     | 35                         | 33     | 34      | 29                                 | -       | -     | -  | -  | 30     | 26                         | 25     | 22      | 20                                 | 21      | -     | -  | -  | - |           |  |  |
|       | 8                 | 244        | 516  | 878  | 23                                 | 49     | 43     | 38     | 31      | 24      | -       | -     | -  | 43 | 38     | 38                         | 36     | 37      | 31                                 | 21      | -     | -  | -  | 33     | 29                         | 28     | 25      | 22                                 | 24      | -     | -  | -  | - |           |  |  |
|       | 10                | 305        | 645  | 1097 | 36                                 | 52     | 47     | 42     | 34      | 28      | 19      | 23    | -  | 45 | 40     | 40                         | 38     | 39      | 34                                 | 23      | -     | -  | -  | 35     | 31                         | 30     | 27      | 25                                 | 26      | -     | -  | -  | - |           |  |  |
|       | 12                | 366        | 775  | 1318 | 52                                 | 55     | 51     | 45     | 37      | 31      | 22      | 27    | -  | 21 | 47     | 42                         | 42     | 40      | 41                                 | 35      | 25    | -  | -  | -      | 37                         | 33     | 32      | 29                                 | 27      | 28    | -  | -  | - | -         |  |  |
| 250   | 2                 | 96         | 203  | 345  | 1                                  | 32     | 31     | 24     | 19      | -       | -       | -     | -  | 29 | 24     | 24                         | 23     | 23      | 18                                 | -       | -     | -  | -  | 19     | -                          | -      | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 192        | 406  | 690  | 5                                  | 41     | 39     | 32     | 25      | 18      | -       | -     | -  | 36 | 31     | 31                         | 29     | 30      | 25                                 | -       | -     | -  | -  | 26     | 21                         | 21     | 18      | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 6                 | 288        | 609  | 1035 | 11                                 | 47     | 44     | 37     | 30      | 22      | -       | -     | -  | 40 | 35     | 35                         | 33     | 34      | 29                                 | -       | -     | -  | -  | 30     | 25                         | 25     | 22      | 20                                 | 21      | -     | -  | -  | - |           |  |  |
|       | 8                 | 383        | 812  | 1380 | 19                                 | 51     | 48     | 41     | 33      | 25      | 19      | 23    | -  | 43 | 38     | 38                         | 36     | 37      | 31                                 | 21      | -     | -  | -  | 33     | 28                         | 28     | 25      | 23                                 | 24      | -     | -  | -  | - |           |  |  |
|       | 10                | 479        | 1015 | 1725 | 30                                 | 54     | 51     | 44     | 36      | 28      | 21      | 26    | -  | 45 | 40     | 40                         | 38     | 39      | 34                                 | 23      | -     | -  | -  | 35     | 31                         | 31     | 27      | 25                                 | 26      | -     | -  | -  | - |           |  |  |
|       | 12                | 575        | 1218 | 2070 | 43                                 | 57     | 54     | 47     | 39      | 31      | 24      | 29    | 22 | 24 | 47     | 42                         | 42     | 40      | 41                                 | 35      | 25    | -  | -  | -      | 37                         | 32     | 32      | 29                                 | 27      | 28    | -  | -  | - | -         |  |  |
| 315   | 2                 | 153        | 324  | 550  | 1                                  | 36     | 37     | 23     | 21      | -       | -       | -     | -  | 30 | 24     | 24                         | 23     | 23      | 19                                 | -       | -     | -  | -  | 21     | 18                         | 18     | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 306        | 648  | 1101 | 5                                  | 46     | 44     | 30     | 27      | 21      | -       | -     | -  | 37 | 31     | 31                         | 30     | 30      | 26                                 | -       | -     | -  | -  | 28     | 25                         | 25     | 22      | 18                                 | 19      | -     | -  | -  | - |           |  |  |
|       | 6                 | 459        | 971  | 1651 | 11                                 | 52     | 49     | 36     | 32      | 26      | 18      | 23    | -  | 41 | 35     | 35                         | 34     | 34      | 30                                 | -       | -     | -  | -  | 32     | 29                         | 29     | 26      | 22                                 | 23      | -     | -  | -  | - |           |  |  |
|       | 8                 | 612        | 1295 | 2202 | 19                                 | 57     | 53     | 40     | 36      | 30      | 22      | 28    | 21 | 23 | 44     | 38                         | 38     | 36      | 37                                 | 32      | 21    | -  | -  | -      | 35                         | 32     | 32      | 29                                 | 25      | 26    | -  | -  | - | -         |  |  |
|       | 10                | 764        | 1619 | 2752 | 29                                 | 61     | 56     | 44     | 39      | 33      | 26      | 32    | 26 | 28 | 46     | 40                         | 40     | 39      | 39                                 | 35      | 23    | -  | -  | -      | 38                         | 34     | 34      | 31                                 | 27      | 28    | -  | -  | - | -         |  |  |
|       | 12                | 917        | 1942 | 3301 | 42                                 | 65     | 59     | 47     | 42      | 37      | 29      | 35    | 31 | 32 | 48     | 42                         | 42     | 40      | 41                                 | 36      | 25    | -  | -  | -      | 39                         | 36     | 36      | 33                                 | 29      | 30    | -  | -  | - | -         |  |  |
| 355   | 2                 | 195        | 412  | 701  | 1                                  | 36     | 44     | 27     | 25      | 18      | -       | -     | -  | 30 | 24     | 24                         | 23     | 23      | 19                                 | -       | -     | -  | -  | 22     | 19                         | 19     | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 389        | 824  | 1401 | 4                                  | 47     | 48     | 33     | 30      | 21      | 18      | 21    | -  | -  | 37     | 31                         | 31     | 30      | 30                                 | 26      | -     | -  | -  | -      | 29                         | 26     | 26      | 23                                 | 18      | 20    | -  | -  | - | -         |  |  |
|       | 6                 | 584        | 1236 | 2102 | 10                                 | 53     | 52     | 38     | 34      | 24      | 21      | 26    | -  | 21 | 41     | 35                         | 35     | 34      | 34                                 | 30      | -     | -  | -  | -      | 33                         | 30     | 30      | 27                                 | 23      | 24    | -  | -  | - | -         |  |  |
|       | 8                 | 779        | 1649 | 2803 | 18                                 | 58     | 55     | 42     | 37      | 28      | 24      | 30    | 23 | 25 | 44     | 38                         | 38     | 37      | 37                                 | 33      | 21    | -  | -  | -      | 36                         | 33     | 33      | 30                                 | 25      | 27    | -  | -  | - | -         |  |  |
|       | 10                | 973        | 2061 | 3503 | 28                                 | 62     | 58     | 46     | 41      | 31      | 28      | 33    | 28 | 29 | 46     | 40                         | 40     | 39      | 39                                 | 35      | 23    | -  | -  | -      | 38                         | 35     | 35      | 32                                 | 28      | 29    | -  | -  | - | -         |  |  |
|       | 12                | 1168       | 2473 | 4205 | 40                                 | 66     | 61     | 49     | 44      | 34      | 31      | 37    | 32 | 33 | 48     | 42                         | 42     | 41      | 41                                 | 37      | 25    | -  | -  | -      | 40                         | 37     | 37      | 34                                 | 30      | 31    | -  | -  | - | -         |  |  |
| 400   | 2                 | 248        | 524  | 891  | 1                                  | 37     | 46     | 28     | 26      | 20      | -       | -     | -  | 30 | 24     | 24                         | 23     | 23      | 19                                 | -       | -     | -  | -  | 22     | 19                         | 19     | -       | -                                  | -       | -     | -  | -  | - |           |  |  |
|       | 4                 | 495        | 1049 | 1783 | 4                                  | 48     | 50     | 34     | 31      | 23      | -       | 22    | -  | -  | 37     | 31                         | 31     | 30      | 30                                 | 26      | -     | -  | -  | -      | 29                         | 26     | 26      | 24                                 | 19      | 20    | -  | -  | - | -         |  |  |
|       | 6                 | 743        | 1573 | 2674 | 9                                  | 54     | 54     | 39     | 35      | 26      | 19      | 27    | 21 | 23 | 41     | 35                         | 35     | 34      | 34                                 | 30      | -     | -  | -  | -      | 33                         | 30     | 30      | 28                                 | 23      | 24    | -  | -  | - | -         |  |  |
|       | 8                 | 990        | 2097 | 3565 | 17                                 | 59     | 57     | 43     | 38      | 30      | 22      | 31    | 24 | 27 | 44     | 38                         | 37     | 37      | 37                                 | 33      | 21    | -  | -  | -      | 36                         | 33     | 33      | 31                                 | 26      | 27    | -  | -  | - | -         |  |  |
|       | 10                | 1238       | 2621 | 4456 | 26                                 | 63     | 60     | 47     | 42      | 33      | 26      | 35    | 29 | 30 | 46     | 40                         | 40     | 39      | 39                                 | 35      | 23    | -  | -  | -      | 39                         | 36     | 36      | 33                                 | 28      | 29    | -  | -  | - | -         |  |  |
|       | 12                | 1485       | 3145 | 5346 | 38                                 | 67     | 63     | 50     | 45      | 36      | 29      | 38    | 34 | 34 | 48     | 42                         | 41     | 41      | 41                                 | 37      | 25    | -  | -  | -      | 40                         | 37     | 37      | 35                                 | 30      | 31    | -  | -  | - | -         |  |  |

## Sound data

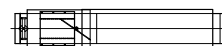
Type NAOOOB (single wall)  
NBOCOOB (double wall)

Sound data  $\Delta p = 250 \text{ Pa}$ 

| Model |                   |            |      |      | Δ p = 250 Pa                       |        |        |        |         |         |           |       |    |                                    |        |        |                            |         |         |           |       |    |                                    |        |                            |        |         |         |           |       |    |    |
|-------|-------------------|------------|------|------|------------------------------------|--------|--------|--------|---------|---------|-----------|-------|----|------------------------------------|--------|--------|----------------------------|---------|---------|-----------|-------|----|------------------------------------|--------|----------------------------|--------|---------|---------|-----------|-------|----|----|
|       | data referring to |            |      |      | discharge sound                    |        |        |        |         |         |           |       |    |                                    |        |        | radiated sound single wall |         |         |           |       |    |                                    |        | radiated sound double wall |        |         |         |           |       |    |    |
|       | inlet spigot      |            |      |      | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        |         |         | Lp values |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |                            |         |         | Lp values |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |                            |        |         |         | Lp values |       |    |    |
|       | velocity          | air volume |      |      | min. Δ<br>p <sub>s</sub><br>Pa     | 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  |                                    | m³/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        | -     | 22 | 35                                 | 29     | 25                         | 23     | 23      | 25      | -         | -     | -  |    |
|       | 10                | 74         | 156  | 266  | 60                                 | 51     | 51     | 42     | 37      | 34      | 23        | 24    | -  | 20                                 | 42     | 39     | 42                         | 43      | 46      | 44        | 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      | 20        | -     | -  | 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                                 | 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      | 20        | -     | -  | 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    | -  | 20                                 | 50     | 47     | 47                         | 44      | 46      | 40        | 29    | 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     | 26      | 28      | -         | -     | -  |    |
|       | 10                | 305        | 645  | 1097 | 36                                 | 55     | 51     | 45     | 38      | 32      | 24        | 26    | -  | 21                                 | 52     | 47     | 47                         | 45      | 46      | 40        | 30    | 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                                 | 52     | 47     | 47                         | 45      | 46      | 40        | 30    | 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        | 21    | -  | 43                                 | 37     | 38     | 36                         | 36      | 32      | 21        | -     | -  | 34                                 | 31     | 31                         | 26     | 22      | 23      | -         | -     | -  |    |
|       | 6                 | 459        | 971  | 1651 | 11                                 | 54     | 52     | 39     | 36      | 31      | 24        | 26    | -  | 47                                 | 41     | 42     | 40                         | 40      | 36      | 25        | -     | -  | 38                                 | 35     | 35                         | 30     | 26      | 27      | -         | -     | -  |    |
|       | 8                 | 612        | 1295 | 2202 | 19                                 | 59     | 56     | 43     | 39      | 34      | 27        | 30    | 24 | 26                                 | 50     | 44     | 44                         | 43      | 43      | 39        | 27    | -  | 21                                 | 41     | 38                         | 38     | 33      | 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        | 22    | -  | -  |
| 355   | 2                 | 195        | 412  | 701  | 1                                  | 39     | 49     | 32     | 31      | 25      | 23        | 20    | -  | 37                                 | 31     | 31     | 30                         | 30      | 26      | -         | -     | -  | 28                                 | 25     | 25                         | 20     | -       | -       | -         | -     | -  |    |
|       | 4                 | 389        | 824  | 1401 | 4                                  | 49     | 53     | 38     | 35      | 28      | 25        | 25    | -  | 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        | 22    | -  | 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        | 30    | 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 | 30                                 | 50     | 44     | 44                         | 43      | 43      | 39        | 27    | -  | 21                                 | 42     | 39                         | 39     | 35      | 30      | 31        | 21    | -  | -  |
|       | 10                | 1238       | 2621 | 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    | -  | -  |
| 400   | 2                 | 248        | 524  | 891  | 1                                  | 40     | 51     | 33     | 32      | 27      | 21        | 22    | -  | 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        | 30    | 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 | 30                                 | 50     | 44     | 44                         | 43      | 43      | 39        | 27    | -  | 21                                 | 42     | 39                         | 39     | 35      | 30      | 31        | 21    | -  | -  |
|       | 10                | 1238       | 2621 | 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    | -  | -  |
| 400   | 2                 | 248        | 524  | 891  | 1                                  | 40     | 51     | 33     | 32      | 27      | 21        | 22    | -  | 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        | 30    | 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 | 30                                 | 50     | 44     | 44                         | 43      | 43      | 39        | 27    | -  | 21                                 | 42     | 39                         | 39     | 35      | 30      | 31        | 21    | -  | -  |
|       | 12                | 1485       | 3145 | 5346 | 38                                 | 68     | 65     | 52     | 47      | 39      | 33        | 40    | 35 | 36                                 | 54     | 48     | 48                         | 47      | 47      | 43        | 31    | 23 | 25                                 | 46     | 43                         | 43     | 39      | 34      | 35        | 25    | -  | -  |



## Type NBOEOOB / NBOEORB (double wall)

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

| Model | $\Delta p = 125 \text{ Pa}$ |            |      |      |                           |        |        |        |         |         |         |           |    |    |                           |                            |        |         |         |         |       |           |    |   |
|-------|-----------------------------|------------|------|------|---------------------------|--------|--------|--------|---------|---------|---------|-----------|----|----|---------------------------|----------------------------|--------|---------|---------|---------|-------|-----------|----|---|
|       | data referring to           |            |      |      | discharge sound           |        |        |        |         |         |         |           |    |    |                           | radiated sound double wall |        |         |         |         |       |           |    |   |
|       | inlet spigot                |            |      |      | $L_w$ in dB/Oct. (re 1pW) |        |        |        |         |         |         | Lp values |    |    | $L_w$ in dB/Oct. (re 1pW) |                            |        |         |         |         |       | Lp values |    |   |
|       | velocity                    | air volume |      |      | min. $\Delta p_s$         | 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  | m³/h | Pa                        | dB     |        |        |         |         |         |           |    |    | dB                        |                            |        |         |         |         |       |           |    |   |
| 100   | 2                           | 15         | 31   | 53   | 2                         | 32     | 33     | 29     | 18      | 24      | -       | -         | -  | -  | -                         | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 29         | 62   | 106  | 7                         | 43     | 42     | 35     | 24      | 27      | -       | -         | -  | -  | 22                        | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 6                           | 44         | 94   | 160  | 17                        | 49     | 48     | 38     | 27      | 29      | 18      | 21        | -  | -  | 26                        | 20                         | -      | -       | -       | 18      | -     | -         | -  | - |
|       | 8                           | 59         | 125  | 213  | 30                        | 53     | 51     | 40     | 30      | 31      | 20      | 25        | -  | 21 | 29                        | 23                         | 19     | 19      | 19      | 21      | -     | -         | -  | - |
|       | 10                          | 74         | 156  | 266  | 47                        | 57     | 54     | 42     | 32      | 32      | 22      | 29        | 21 | 24 | 32                        | 26                         | 22     | 21      | 21      | 23      | -     | -         | -  | - |
|       | 12                          | 89         | 188  | 320  | 68                        | 60     | 56     | 43     | 33      | 33      | 23      | 31        | 24 | 26 | 33                        | 27                         | 23     | 23      | 23      | 25      | -     | -         | -  | - |
| 125   | 2                           | 23         | 49   | 84   | 2                         | 32     | 37     | 34     | 26      | 27      | 20      | -         | -  | -  | -                         | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 47         | 99   | 168  | 7                         | 42     | 46     | 40     | 32      | 32      | 25      | -         | -  | -  | 23                        | 18                         | -      | -       | -       | -       | -     | -         | -  | - |
|       | 6                           | 70         | 149  | 253  | 16                        | 48     | 51     | 44     | 35      | 34      | 27      | 23        | -  | 20 | 27                        | 22                         | 19     | 18      | -       | 19      | -     | -         | -  | - |
|       | 8                           | 94         | 198  | 337  | 28                        | 52     | 54     | 46     | 37      | 36      | 29      | 27        | 21 | 24 | 30                        | 25                         | 22     | 21      | 20      | 22      | -     | -         | -  | - |
|       | 10                          | 117        | 248  | 421  | 44                        | 55     | 57     | 48     | 39      | 37      | 30      | 30        | 25 | 27 | 33                        | 28                         | 25     | 23      | 22      | 24      | -     | -         | -  | - |
|       | 12                          | 140        | 296  | 504  | 63                        | 58     | 60     | 50     | 41      | 39      | 32      | 32        | 27 | 30 | 34                        | 29                         | 26     | 25      | 24      | 26      | -     | -         | -  | - |
| 160   | 2                           | 39         | 82   | 139  | 2                         | 36     | 39     | 35     | 32      | 28      | 28      | -         | -  | -  | 18                        | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 78         | 164  | 279  | 7                         | 45     | 47     | 42     | 37      | 34      | 32      | -         | -  | -  | 25                        | 20                         | 19     | -       | -       | -       | -     | -         | -  | - |
|       | 6                           | 116        | 246  | 418  | 15                        | 51     | 52     | 45     | 41      | 37      | 35      | 25        | -  | 21 | 29                        | 24                         | 23     | 20      | 18      | 20      | -     | -         | -  | - |
|       | 8                           | 155        | 328  | 558  | 26                        | 54     | 55     | 48     | 43      | 39      | 37      | 28        | 22 | 25 | 32                        | 27                         | 26     | 23      | 21      | 23      | -     | -         | -  | - |
|       | 10                          | 194        | 410  | 697  | 41                        | 57     | 58     | 50     | 45      | 40      | 38      | 31        | 25 | 28 | 34                        | 29                         | 28     | 25      | 23      | 25      | -     | -         | -  | - |
|       | 12                          | 232        | 491  | 835  | 59                        | 60     | 60     | 52     | 46      | 42      | 39      | 33        | 28 | 30 | 36                        | 31                         | 30     | 27      | 25      | 27      | -     | -         | -  | - |
| 200   | 2                           | 61         | 129  | 219  | 2                         | 38     | 36     | 37     | 35      | 28      | 29      | -         | -  | -  | 19                        | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 122        | 258  | 439  | 6                         | 47     | 44     | 44     | 40      | 34      | 33      | -         | -  | -  | 26                        | 22                         | 21     | 18      | -       | -       | -     | -         | -  | - |
|       | 6                           | 183        | 387  | 658  | 14                        | 52     | 49     | 48     | 43      | 37      | 36      | 24        | -  | -  | 30                        | 26                         | 25     | 22      | 20      | 21      | -     | -         | -  | - |
|       | 8                           | 244        | 516  | 878  | 25                        | 56     | 52     | 51     | 46      | 40      | 38      | 28        | -  | 22 | 33                        | 29                         | 28     | 25      | 22      | 24      | -     | -         | -  | - |
|       | 10                          | 305        | 645  | 1097 | 39                        | 58     | 55     | 53     | 47      | 42      | 39      | 30        | 23 | 25 | 35                        | 31                         | 30     | 27      | 25      | 26      | -     | -         | -  | - |
|       | 12                          | 366        | 775  | 1318 | 56                        | 61     | 57     | 55     | 49      | 43      | 40      | 32        | 26 | 27 | 37                        | 33                         | 32     | 29      | 27      | 28      | -     | -         | -  | - |
| 250   | 2                           | 96         | 203  | 345  | 1                         | 40     | 41     | 42     | 36      | 31      | 31      | -         | -  | -  | 19                        | -                          | -      | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 192        | 406  | 690  | 6                         | 49     | 49     | 48     | 41      | 36      | 35      | 23        | -  | -  | 26                        | 21                         | 21     | 18      | -       | -       | -     | -         | -  | - |
|       | 6                           | 288        | 609  | 1035 | 13                        | 55     | 53     | 52     | 44      | 39      | 37      | 28        | -  | 22 | 30                        | 25                         | 25     | 22      | 20      | 21      | -     | -         | -  | - |
|       | 8                           | 383        | 812  | 1380 | 23                        | 59     | 56     | 55     | 47      | 41      | 39      | 31        | 23 | 25 | 33                        | 28                         | 28     | 25      | 23      | 24      | -     | -         | -  | - |
|       | 10                          | 479        | 1015 | 1725 | 36                        | 62     | 58     | 58     | 48      | 43      | 40      | 33        | 27 | 28 | 35                        | 31                         | 31     | 27      | 25      | 26      | -     | -         | -  | - |
|       | 12                          | 575        | 1218 | 2070 | 52                        | 64     | 60     | 59     | 50      | 44      | 41      | 36        | 30 | 31 | 37                        | 32                         | 32     | 29      | 27      | 28      | -     | -         | -  | - |
| 315   | 2                           | 153        | 324  | 550  | 1                         | 42     | 44     | 41     | 42      | 42      | 37      | -         | -  | -  | 21                        | 18                         | 18     | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 306        | 648  | 1101 | 5                         | 52     | 51     | 47     | 46      | 46      | 40      | 25        | -  | 21 | 28                        | 25                         | 25     | 22      | 18      | 19      | -     | -         | -  | - |
|       | 6                           | 459        | 971  | 1651 | 12                        | 58     | 56     | 51     | 49      | 48      | 41      | 30        | 23 | 25 | 32                        | 29                         | 29     | 26      | 22      | 23      | -     | -         | -  | - |
|       | 8                           | 612        | 1295 | 2202 | 22                        | 62     | 59     | 54     | 51      | 49      | 42      | 34        | 28 | 29 | 35                        | 32                         | 32     | 29      | 25      | 26      | -     | -         | -  | - |
|       | 10                          | 764        | 1619 | 2752 | 34                        | 65     | 61     | 56     | 52      | 50      | 43      | 37        | 32 | 33 | 38                        | 34                         | 34     | 31      | 27      | 28      | -     | -         | -  | - |
|       | 12                          | 917        | 1942 | 3301 | 49                        | 68     | 63     | 57     | 53      | 51      | 44      | 39        | 35 | 36 | 39                        | 36                         | 36     | 33      | 29      | 30      | -     | -         | -  | - |
| 355   | 2                           | 195        | 412  | 701  | 1                         | 43     | 47     | 46     | 47      | 43      | 44      | 20        | -  | -  | 22                        | 19                         | 19     | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 389        | 824  | 1401 | 5                         | 54     | 54     | 52     | 50      | 45      | 46      | 28        | 21 | 24 | 29                        | 26                         | 26     | 23      | 18      | 20      | -     | -         | -  | - |
|       | 6                           | 584        | 1236 | 2102 | 12                        | 60     | 59     | 56     | 52      | 47      | 47      | 33        | 26 | 29 | 33                        | 30                         | 30     | 27      | 23      | 24      | -     | -         | -  | - |
|       | 8                           | 779        | 1649 | 2803 | 21                        | 64     | 62     | 58     | 54      | 48      | 47      | 36        | 30 | 32 | 36                        | 33                         | 33     | 30      | 25      | 27      | -     | -         | -  | - |
|       | 10                          | 973        | 2061 | 3503 | 33                        | 67     | 64     | 60     | 55      | 48      | 48      | 39        | 34 | 35 | 38                        | 35                         | 35     | 32      | 28      | 29      | -     | -         | -  | - |
|       | 12                          | 1168       | 2473 | 4205 | 47                        | 70     | 66     | 62     | 56      | 49      | 48      | 42        | 38 | 38 | 40                        | 37                         | 37     | 34      | 30      | 31      | -     | -         | -  | - |
| 400   | 2                           | 248        | 524  | 891  | 1                         | 43     | 48     | 48     | 49      | 46      | 42      | 22        | -  | -  | 22                        | 19                         | 19     | -       | -       | -       | -     | -         | -  | - |
|       | 4                           | 495        | 1049 | 1783 | 5                         | 54     | 56     | 54     | 52      | 48      | 43      | 29        | 24 | 26 | 29                        | 26                         | 26     | 24      | 19      | 20      | -     | -         | -  | - |
|       | 6                           | 743        | 1573 | 2674 | 11                        | 60     | 61     | 57     | 54      | 48      | 43      | 34        | 29 | 31 | 33                        | 30                         | 30     | 28      | 23      | 24      | -     | -         | -  | - |
|       | 8                           | 990        | 2097 | 3565 | 20                        | 65     | 64     | 59     | 55      | 49      | 44      | 38        | 33 | 35 | 36                        | 33                         | 33     | 31      | 26      | 27      | -     | -         | -  | - |
|       | 10                          | 1238       | 2621 | 4456 | 32                        | 68     | 67     | 61     | 56      | 50      | 44      | 41        | 36 | 37 | 39                        | 36                         | 36     | 33      | 28      | 29      | -     | -         | -  | - |
|       | 12                          | 1485       | 3145 | 5346 | 46                        | 71     | 69     | 63     | 56      | 50      | 44      | 43        | 39 | 40 | 40                        | 37                         | 37     | 35      | 30      | 31      | -     | -         | -  | - |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 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 "-".
- $\Delta p_s$  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

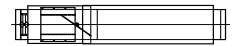
| Hz             | 125 | 250 | 500 | 1K | 2K | 4K |
|----------------|-----|-----|-----|----|----|----|
| Discharge (dB) | 5   | 10  | 20  | 30 | 30 | 25 |
| Radiated (dB)  | 2   | 5   | 10  | 15 | 15 | 20 |

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   | 7   | 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 |

## Sound data

Type NBOEOOB / NBOEORB (double wall)

Sound data  $\Delta p = 250 \text{ Pa}$ 

| Model | $\Delta p = 250 \text{ Pa}$ |            |      |                   |                           |        |        |        |         |         |              |       |    |                           |                            |        |        |         |         |              |       |    |    |
|-------|-----------------------------|------------|------|-------------------|---------------------------|--------|--------|--------|---------|---------|--------------|-------|----|---------------------------|----------------------------|--------|--------|---------|---------|--------------|-------|----|----|
|       | data referring to           |            |      |                   | discharge sound           |        |        |        |         |         |              |       |    |                           | radiated sound double wall |        |        |         |         |              |       |    |    |
|       | inlet spigot                |            |      |                   | $L_w$ in dB/Oct. (re 1pW) |        |        |        |         |         | $L_p$ values |       |    | $L_w$ in dB/Oct. (re 1pW) |                            |        |        |         |         | $L_p$ values |       |    |    |
|       | velocity                    | air volume |      |                   | min. $\Delta p_s$         | 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 | Pa                        | dB     |        |        |         |         |              | dB    |    |                           |                            |        |        | dB      |         |              |       |    |    |
| 100   | 2                           | 15         | 31   | 53                | 2                         | 32     | 36     | 35     | 24      | 29      | 20           | --    | -- | --                        | 21                         | -      | -      | -       | -       | -            | --    | -- | -- |
|       | 4                           | 29         | 62   | 106               | 7                         | 43     | 45     | 40     | 30      | 32      | 25           | --    | -- | --                        | 28                         | 22     | 18     | -       | -       | 18           | --    | -- | -- |
|       | 6                           | 44         | 94   | 160               | 17                        | 49     | 50     | 44     | 33      | 34      | 27           | 23    | -- | --                        | 32                         | 26     | 22     | 20      | 20      | 22           | --    | -- | -- |
|       | 8                           | 59         | 125  | 213               | 30                        | 54     | 54     | 46     | 36      | 36      | 29           | 27    | 20 | 23                        | 35                         | 29     | 25     | 23      | 23      | 25           | --    | -- | -- |
|       | 10                          | 74         | 156  | 266               | 47                        | 57     | 56     | 48     | 37      | 37      | 31           | 30    | 24 | 26                        | 38                         | 32     | 28     | 25      | 25      | 27           | --    | -- | -- |
|       | 12                          | 89         | 188  | 320               | 68                        | 60     | 59     | 49     | 39      | 38      | 32           | 33    | 27 | 29                        | 39                         | 33     | 29     | 27      | 27      | 29           | --    | -- | -- |
| 125   | 2                           | 23         | 49   | 84                | 2                         | 33     | 40     | 40     | 31      | 32      | 28           | --    | -- | --                        | 22                         | 17     | -      | -       | -       | -            | --    | -- | -- |
|       | 4                           | 47         | 99   | 168               | 7                         | 43     | 48     | 46     | 37      | 36      | 32           | 21    | -- | --                        | 29                         | 24     | 21     | 18      | -       | 19           | --    | -- | -- |
|       | 6                           | 70         | 149  | 253               | 16                        | 49     | 54     | 49     | 40      | 39      | 35           | 26    | 20 | 23                        | 33                         | 28     | 25     | 22      | 21      | 23           | --    | -- | -- |
|       | 8                           | 94         | 198  | 337               | 28                        | 53     | 57     | 51     | 43      | 41      | 37           | 29    | 25 | 27                        | 36                         | 31     | 28     | 25      | 24      | 26           | --    | -- | -- |
|       | 10                          | 117        | 248  | 421               | 44                        | 56     | 60     | 53     | 44      | 42      | 38           | 32    | 28 | 30                        | 39                         | 34     | 31     | 27      | 26      | 28           | --    | -- | -- |
|       | 12                          | 140        | 296  | 504               | 63                        | 59     | 62     | 55     | 46      | 43      | 39           | 35    | 30 | 33                        | 40                         | 35     | 32     | 29      | 28      | 30           | --    | -- | -- |
| 160   | 2                           | 39         | 82   | 139               | 2                         | 38     | 42     | 40     | 36      | 33      | 34           | --    | -- | --                        | 24                         | 19     | 18     | -       | -       | -            | --    | -- | -- |
|       | 4                           | 78         | 164  | 279               | 7                         | 47     | 50     | 46     | 42      | 38      | 39           | 23    | -- | --                        | 31                         | 26     | 25     | 20      | 18      | 20           | --    | -- | -- |
|       | 6                           | 116        | 246  | 418               | 15                        | 52     | 55     | 50     | 45      | 41      | 41           | 28    | 22 | 24                        | 35                         | 30     | 29     | 24      | 22      | 24           | --    | -- | -- |
|       | 8                           | 155        | 328  | 558               | 26                        | 56     | 58     | 53     | 47      | 43      | 43           | 31    | 26 | 28                        | 38                         | 33     | 32     | 27      | 25      | 27           | --    | -- | -- |
|       | 10                          | 194        | 410  | 697               | 41                        | 59     | 61     | 55     | 49      | 45      | 44           | 34    | 29 | 31                        | 40                         | 35     | 34     | 29      | 27      | 29           | --    | -- | -- |
|       | 12                          | 232        | 491  | 835               | 59                        | 62     | 63     | 56     | 51      | 46      | 46           | 36    | 31 | 33                        | 42                         | 37     | 36     | 31      | 29      | 31           | --    | -- | -- |
| 200   | 2                           | 61         | 129  | 219               | 2                         | 41     | 40     | 41     | 39      | 32      | 34           | --    | -- | --                        | 25                         | 21     | 20     | -       | -       | -            | --    | -- | -- |
|       | 4                           | 122        | 258  | 439               | 6                         | 50     | 48     | 48     | 44      | 38      | 38           | 23    | -- | --                        | 32                         | 28     | 27     | 22      | 19      | 21           | --    | -- | -- |
|       | 6                           | 183        | 387  | 658               | 14                        | 55     | 52     | 52     | 47      | 41      | 41           | 27    | -- | 22                        | 36                         | 32     | 31     | 26      | 23      | 25           | --    | -- | -- |
|       | 8                           | 244        | 516  | 878               | 25                        | 58     | 56     | 55     | 50      | 44      | 43           | 31    | 23 | 26                        | 39                         | 35     | 34     | 29      | 26      | 28           | --    | -- | -- |
|       | 10                          | 305        | 645  | 1097              | 39                        | 61     | 58     | 57     | 51      | 46      | 44           | 33    | 26 | 28                        | 41                         | 37     | 36     | 31      | 29      | 30           | --    | -- | -- |
|       | 12                          | 366        | 775  | 1318              | 56                        | 63     | 60     | 59     | 53      | 47      | 45           | 35    | 29 | 31                        | 43                         | 39     | 38     | 33      | 30      | 32           | 20    | -- | -- |
| 250   | 2                           | 96         | 203  | 345               | 1                         | 42     | 46     | 46     | 41      | 35      | 36           | --    | -- | --                        | 25                         | 20     | 20     | -       | -       | -            | --    | -- | -- |
|       | 4                           | 192        | 406  | 690               | 6                         | 52     | 53     | 53     | 46      | 41      | 40           | 27    | 20 | 23                        | 32                         | 27     | 27     | 22      | 20      | 21           | --    | -- | -- |
|       | 6                           | 288        | 609  | 1035              | 13                        | 57     | 57     | 57     | 49      | 43      | 43           | 31    | 25 | 27                        | 36                         | 31     | 31     | 26      | 24      | 25           | --    | -- | -- |
|       | 8                           | 383        | 812  | 1380              | 23                        | 61     | 60     | 60     | 52      | 46      | 44           | 34    | 28 | 31                        | 39                         | 34     | 34     | 29      | 27      | 28           | --    | -- | -- |
|       | 10                          | 479        | 1015 | 1725              | 36                        | 64     | 63     | 62     | 53      | 47      | 45           | 37    | 31 | 33                        | 41                         | 37     | 37     | 31      | 29      | 30           | --    | -- | -- |
|       | 12                          | 575        | 1218 | 2070              | 52                        | 66     | 64     | 64     | 55      | 49      | 46           | 39    | 33 | 35                        | 43                         | 38     | 38     | 33      | 31      | 32           | 20    | -- | -- |
| 315   | 2                           | 153        | 324  | 550               | 1                         | 44     | 47     | 45     | 47      | 47      | 42           | 21    | -- | --                        | 27                         | 24     | 24     | 19      | -       | -            | --    | -- | -- |
|       | 4                           | 306        | 648  | 1101              | 5                         | 54     | 55     | 51     | 51      | 50      | 45           | 28    | 22 | 25                        | 34                         | 31     | 31     | 26      | 22      | 23           | --    | -- | -- |
|       | 6                           | 459        | 971  | 1651              | 12                        | 60     | 59     | 55     | 54      | 52      | 46           | 33    | 27 | 29                        | 38                         | 35     | 35     | 30      | 26      | 27           | --    | -- | -- |
|       | 8                           | 612        | 1295 | 2202              | 22                        | 64     | 62     | 58     | 55      | 54      | 47           | 36    | 31 | 33                        | 41                         | 38     | 38     | 33      | 29      | 30           | --    | -- | -- |
|       | 10                          | 764        | 1619 | 2752              | 34                        | 67     | 65     | 60     | 57      | 55      | 48           | 39    | 34 | 35                        | 44                         | 40     | 40     | 35      | 31      | 32           | 22    | -- | -- |
|       | 12                          | 917        | 1942 | 3301              | 49                        | 70     | 67     | 61     | 58      | 55      | 49           | 41    | 37 | 37                        | 45                         | 42     | 42     | 37      | 33      | 34           | 24    | -- | -- |
| 355   | 2                           | 195        | 412  | 701               | 1                         | 44     | 50     | 50     | 51      | 47      | 49           | 24    | -- | --                        | 28                         | 25     | 25     | 20      | -       | -            | --    | -- | -- |
|       | 4                           | 389        | 824  | 1401              | 5                         | 55     | 57     | 56     | 55      | 50      | 51           | 31    | 25 | 27                        | 35                         | 32     | 32     | 27      | 22      | 24           | --    | -- | -- |
|       | 6                           | 584        | 1236 | 2102              | 12                        | 61     | 62     | 59     | 57      | 51      | 52           | 35    | 30 | 32                        | 39                         | 36     | 36     | 31      | 26      | 28           | --    | -- | -- |
|       | 8                           | 779        | 1649 | 2803              | 21                        | 65     | 65     | 62     | 58      | 52      | 53           | 39    | 34 | 35                        | 42                         | 39     | 39     | 34      | 29      | 31           | 20    | -- | -- |
|       | 10                          | 973        | 2061 | 3503              | 33                        | 69     | 67     | 64     | 59      | 53      | 53           | 41    | 36 | 38                        | 44                         | 41     | 41     | 36      | 32      | 33           | 22    | -- | -- |
|       | 12                          | 1168       | 2473 | 4205              | 47                        | 71     | 69     | 65     | 60      | 53      | 54           | 44    | 39 | 40                        | 46                         | 43     | 43     | 38      | 33      | 35           | 24    | -- | -- |
| 400   | 2                           | 248        | 524  | 891               | 1                         | 44     | 51     | 52     | 53      | 50      | 47           | 25    | -- | 20                        | 28                         | 25     | 25     | 21      | -       | 17           | --    | -- | -- |
|       | 4                           | 495        | 1049 | 1783              | 5                         | 55     | 59     | 57     | 56      | 52      | 48           | 32    | 26 | 29                        | 35                         | 32     | 32     | 28      | 23      | 24           | --    | -- | -- |
|       | 6                           | 743        | 1573 | 2674              | 11                        | 61     | 63     | 61     | 58      | 53      | 48           | 36    | 32 | 33                        | 39                         | 36     | 36     | 32      | 27      | 28           | --    | -- | -- |
|       | 8                           | 990        | 2097 | 3565              | 20                        | 66     | 66     | 63     | 59      | 54      | 49           | 40    | 35 | 37                        | 42                         | 39     | 39     | 35      | 30      | 31           | 21    | -- | -- |
|       | 10                          | 1238       | 2621 | 4456              | 32                        | 69     | 69     | 65     | 60      | 54      | 49           | 43    | 38 | 40                        | 45                         | 42     | 42     | 37      | 32      | 33           | 23    | -- | -- |
|       | 12                          | 1485       | 3145 | 5346              | 46                        | 72     | 71     | 66     | 61      | 55      | 49           | 45    | 41 | 42                        | 46                         | 43     | 43     | 39      | 34      | 35           | 25    | -- | -- |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 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.
- $L_p$  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 "--".
- $\Delta p_s$  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   | 7   | 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 |













## OUR TECHNOLOGY | YOUR WELLBEING

**BARCOL-AIR** | AIR DISTRIBUTION

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**[WWW.BARCOL-AIR.NL](http://WWW.BARCOL-AIR.NL)**



## RECTANGULAR VAV AND CAV

PRESSURE INDEPENDENT AIR VOLUME CONTROL TERMINALS

NK / NL TYPE

BARCOL-AIR

**SIG** AIR HANDLING





### Composition type designation:

**N - L - O - F - O - O - B**

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

N = air volume control terminals

#### **K** Position 2: **Function**

O = not applicable  
K = single wall, rectangular VAV terminal, flanged type  
L = double wall, rectangular VAV terminal, flanged type  
1 = non standard, specify separately

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

O = controls specified separately

#### **F** Position 4: **Outlet and sound attenuator**

O = not applicable  
A = rectangular outlet  
F = rectangular outlet with splitter sound attenuator  
N = rectangular outlet with plenum for electric reheat coil  
R = rectangular outlet with sound attenuator and with plenum for electric reheat coil  
1 = non standard, specify separately

#### **O** Position 5: **Reheat coil**

O = without reheat coil  
E = 1-stage 230VAC/1-phase electric reheat coil  
F = 2-stage 230VAC/1-phase electric reheat coil  
G = 3-stage 230VAC/1-phase electric reheat coil  
H = 1-stage 400VAC/3-phase electric reheat coil  
J = 2-stage 400VAC/3-phase electric reheat coil  
T = 230VAC-1Ph Modulating control (Thyristor)  
V = 400VAC-3Ph Modulating control (Thyristor)  
1 = non standard, specify separately

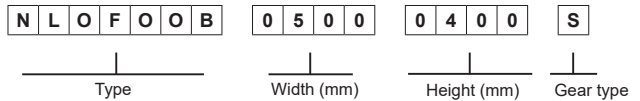
#### **O** Position 6: **Controls (type & function)**

O = not applicable  
R = return/extract application

#### **B** Position 7: **Sensor**

O = not applicable  
B = Flo-Cross®, 2 x 12 point averaging and signal amplifying air flow sensor (standard)  
L = damper blades provided with neoprene gasket for shut-off function with Flo-Cross® sensor  
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 ( $V_{max}$ ,  $V_{min}$  etc)
- control handing (standard right side)
- if applicable, electric reheat coil capacity

##### Non standard terminals:

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

## Type NK..... / NL.....



## Application

Types NK and NL are rectangular pressure-independent VAV and CAV air volume control terminals. The terminals are designed particularly for systems with larger air volumes and duct sizes and 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. Furthermore the VAV terminals can be used for room pressure control.

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

Alternatively VAV terminals are ideal to be used for CO2 control. Dependent of the indoor air quality, always the correct amount of fresh air will be supplied to the room. Of course the primary air handling system need to be suitable for this.

The VAV or CAV terminals can be used either for supply or return air applications in new or refurbishment projects. The terminals do have a single wall (type NK) or double wall (type NL) construction and can optionally be supplied with an additional splitter sound attenuator and a plenum with built-in electric reheat coil.

## Features:

- Pressure independent control functions.
- Compact design.
- Volume control range 100% down to 10%.
- Low pressure loss over the terminal.
- Single or double wall construction.
- Factory fitted additional attenuator and/or plenum with built-in electric reheat coil.
- Multi-leaf damper blade; full shut-off optional.
- Low noise production.
- Suitable for large air volumes.
- Suitable for all control functions (VAV, CAV, shut-off, etc.) 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.

## Technische information

## Casing:

Single or double wall, air-tight construction made of galvanized sheet steel; casing leakage rate to Class II VDI 3803 / DIN 24 194 or NEN-EN 1751 Class C. 30 mm flange connections at the in- and outlet. In case of double wall construction 25 mm insulation material is used, completely enclosed by the double wall construction.

## Insulation:

The NL-terminal is supplied with 25 mm thermal and acoustical insulation (30 kg/m<sup>3</sup>) complying to: NFPA90A and 90B surface burning characteristics, BS476 part 6 and 7 fire propagation, UL 181 class 0 surface spread of flame and UL 94 HF1 flammability. There is no lining in the air stream.

## Damper

- Multi-leaf damper, blade coupling system with aluminium gears.
- The blades are made of torsion proof hollow profiles with height of 100mm or 165mm.
- Damper blades are optionally provided with sealing lips for shut-off function. According NEN-EN-1751 class 2. Optional available is sealing according NEN-EN-1751 class 4.
- Damper shaft is made of Ø12 mm solid steel and rotating in self lubricating polyamide maintenance free bearings.
- The casing and blades can be optionally supplied in stainless steel type 304 or type 316. Also powder-coated colour according to RAL is optionally available. When a stainless steel or RAL option is selected the Flo-Cross® will maintain standard made out of extruded aluminium with nylon core and feet.
- Recommended damper torques:  
For surfaces ≤ 1 m<sup>2</sup>: 5 Nm.  
For surfaces 1 – 2 m<sup>2</sup>: min. 8 Nm.  
For surfaces ≥ 2 m<sup>2</sup>: min. 15 Nm.

## Flo-Cross®:

- Extruded aluminium construction with nylon\* core + feet. (\* type Bergamid® B70 G30 H BK713-PA6-F30).

## Sound attenuator:

- Air-tight construction made out of galvanized sheet steel with a 30 mm flange connection on both sides. The attenuating splitter is fitted inside the casing and is made out of a galvanized sheet steel frame, filled with an attenuating mineral wool which is treated with a protective tissue layer.
- Special type insulation for hospital application on request.

## Reheat coil:

- Choice of electric reheat coil 230VAC/1-phase or 400VAC/3-phase. Coils are fitted in plenum made of galvanized sheet steel with 13 mm internal insulation, type Basotect-G® by BASF (technical datasheet available upon request). More detailed technical information can be found in the separate NO documentation. Separately a hot water duct heater is available type NJOGxxx

## Controls:

- Suitable for use with pneumatic, analogue electronic or DDC controllers. Controls can be factory fitted, wired and calibrated. Plug&Play. Controls enclosure NEMA-1 (galvanized sheet steel) can be provided optionally.

## 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 on site delivered terminal is ready to be installed and commissioned.
- When terminals are ordered with controls, these will be factory fitted, wired and calibrated upon request. The calibration data will be put on a sticker that is located on the VAV box or VAV controller.
- Controls location and hot water or electric connections are as a standard fitted on the right hand side of the terminal when looking in the direction of the airflow. On request, the terminal can be delivered with connections on the left hand side.
- When terminals are ordered with 'free-issue' controls by others, wiring diagrams and mounting instructions must be provided.

Type NK..... / NL.....



### Specify as

#### Example:

Supply and install, variable air volume terminals, double-wall construction with sound attenuator with rectangular outlet, constructed from galvanized sheet steel. The casing leakage rate shall be classified according to class II, VDI 3803/DIN 24 194 and the duct-sleeve connections shall be 30 mm flange type. The VAV terminals shall have a multi-leaf opposed blade damper with steel damper shaft rotating in self lubricating Nylon bearings. A centre averaging airflow sensor with at least 2 x 12 test points and amplified signal air flow sensor, type Flo-Cross® shall control the airflow with an accuracy not less than 2.5 %. The VAV terminal shall be supplied with an additional sound attenuator made of galvanized sheet steel and internal isolation according to class '0' fire regulation.

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

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

Maximum air volume 1280 l/s  
Minimum air volume 512 l/s  
Terminal size 400 x 400 mm  
Max. pressure loss 38 Pa  
Max. discharge sound index < NC35 (@250Pa Δp)  
Max. radiated sound index < NC35 (@250Pa Δp)

Ordering example: type – width – height =  
NLOFOOB – 0400 - 0400-S.

Manufacturer: Barcol-Air, the Netherlands

### Installing Instructions:

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

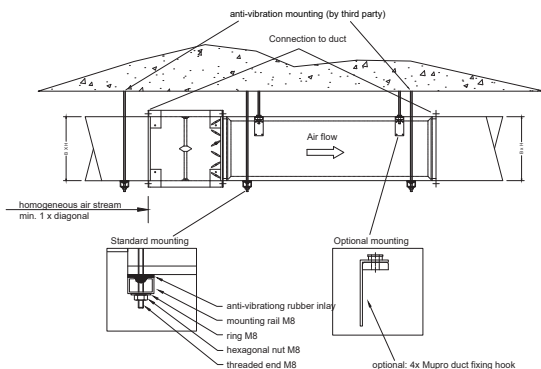
This installation method:

- 1 Shall prevent the body of the VAV terminal from high mechanical tension, which could damage the construction and performance of the terminal.
- 2 Shall prevent torsion on the VAV terminals,

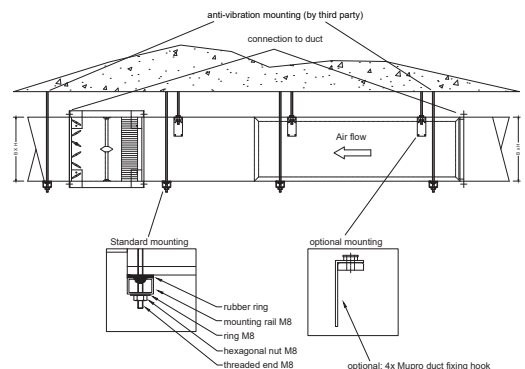
which could cause malfunction of the damper blades.

- 3 Provides some flexibility to the final location of the VAV terminals.
- 4 Use at least 1x diagonal straight duct length before the VAV inlet.
- 5 Additional manual volume control dampers (VCD's) before the inlet are not required / recommended!!
6. All connections shall be thermally isolated.
7. Pressure sensing tubes of Flo-Cross® airflow sensor shall not be "kinked" or otherwise obstructed by the external duct insulation.

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



Mounting drawing type NLOFOOB (supply air)



Mounting drawing type NLOFORB (return air)

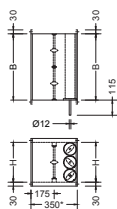
Type NK....



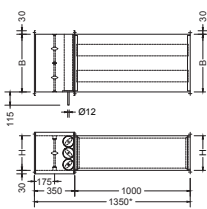
Type NKOA...



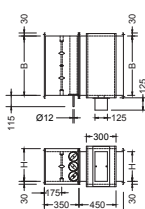
Type NKOF...



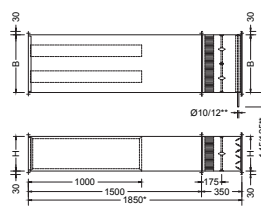
Type NKOA00B



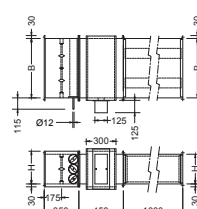
Type NKOF00B



Type NKON00B



Type NKOF00B (retour)



Type NKOR00B

| Dimension<br>Height | Width (W)  |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|---------------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
|                     | (H)<br>200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 750 | 800 | 900 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 100                 | *          | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 200                 | *          | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 250                 |            | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 300                 |            |     | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 350                 |            |     |     | *   | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 400                 |            |     |     |     | *   | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 450                 |            |     |     |     |     | *   | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 500                 |            |     |     |     |     |     | *   | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 600                 |            |     |     |     |     |     |     | *   | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 700                 |            |     |     |     |     |     |     |     | *   | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 800                 |            |     |     |     |     |     |     |     |     | *   | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 900                 |            |     |     |     |     |     |     |     |     |     | *   | *   | *   | *    | *    | *    | *    | *    | *    |
| 1000                |            |     |     |     |     |     |     |     |     |     |     | *   | *   | *    | *    | *    | *    | *    | *    |
| 1100                |            |     |     |     |     |     |     |     |     |     |     |     | *   | *    | *    | *    | *    | *    | *    |
| 1200                |            |     |     |     |     |     |     |     |     |     |     |     |     | *    | *    | *    | *    | *    | *    |

## Notes:

1. All dimensions are in mm.
2. Other dimensions available upon request.
3. \* = Installation length.
4. Higher or wider units available upon request.
5. For hot water reheat sections for duct mounting see our separate documentation NJOG/H.

## Kv values rectangular VAV terminals (NK/NL/AFS/AHS)

| Rectangular PV terminals (MONOLITHIC) |           |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
|---------------------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| Height<br>(H)                         | Width (W) |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
| 100                                   | 200       | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 750 | 800 | 900 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |      |
| 200                                   | 18        | 23  | 26  | 32  | 35  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
| 250                                   | 35        | 45  | 56  | 63  | 71  | 81  | 91  | 101 | 106 | 126 | 136 | 142 | 162 |      |      |      |      |      |      |      |
| 300                                   |           | 45  | 56  | 63  | 71  | 81  | 91  | 101 | 106 | 126 | 136 | 142 | 162 | 177  |      |      |      |      |      |      |
| 350                                   |           |     | 73  | 87  | 101 | 115 | 123 | 137 | 147 | 175 | 189 | 203 | 220 | 248  | 294  |      |      |      |      |      |
| 400                                   |           |     |     | 87  | 101 | 115 | 123 | 137 | 147 | 175 | 189 | 203 | 220 | 248  | 294  | 386  |      |      |      |      |
| 450                                   |           |     |     |     | 128 | 146 | 165 | 183 | 202 | 238 | 249 | 255 | 292 | 329  | 383  | 386  | 436  |      |      |      |
| 500                                   |           |     |     |     |     | 146 | 165 | 183 | 202 | 238 | 249 | 255 | 292 | 329  | 383  | 386  | 436  | 485  |      |      |
| 600                                   |           |     |     |     |     |     | 211 | 235 | 258 | 291 | 318 | 328 | 376 | 423  | 516  | 580  | 673  | 706  | 801  |      |
| 700                                   |           |     |     |     |     |     |     |     | 290 | 346 | 373 | 401 | 459 | 515  | 601  | 687  | 794  | 864  | 961  |      |
| 800                                   |           |     |     |     |     |     |     |     |     | 408 | 426 | 458 | 542 | 587  | 687  | 794  | 864  | 961  | 1039 |      |
| 900                                   |           |     |     |     |     |     |     |     |     |     |     | 506 | 580 | 653  | 760  | 938  | 1049 | 1143 | 1294 |      |
| 1000                                  |           |     |     |     |     |     |     |     |     |     |     |     | 663 | 747  | 915  | 938  | 1049 | 1143 | 1294 |      |
| 1100                                  |           |     |     |     |     |     |     |     |     |     |     |     |     | 839  | 1026 | 1153 | 1338 | 1402 | 1590 |      |
| 1200                                  |           |     |     |     |     |     |     |     |     |     |     |     |     |      | 1087 | 1153 | 1338 | 1402 | 1590 |      |
|                                       |           |     |     |     |     |     |     |     |     |     |     |     |     |      |      | 1136 | 1367 | 1582 | 1660 | 1884 |

$$Flow = Kv \times \sqrt{\Delta p_{ic}}$$

 $\Delta p_{ic}$  = Flo-Cross® signal
Example: If  $\Delta p_{ic}$  = 30 Pa and VAV-size = 500 x 350.

$$Flow = 123 \times \sqrt{30} = 674 \text{ l/s.}$$

## Dimensions

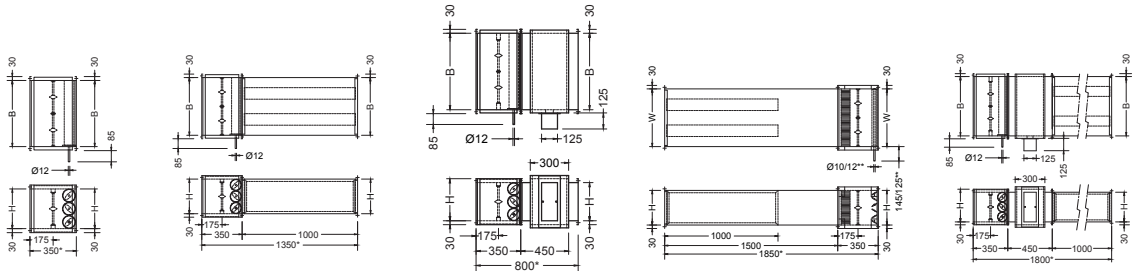
Type NL.....



Type NLOA...



Type NLOF...



Type NLOAOB

Type NLOFOOB

Type NLONOOB

Type NLOFORB (retour)

Type NLOROOB

Weight NK terminals (excl. controls, enclosure and attenuator)

| Height<br>(H) | Width (W) |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|---------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
|               | 200       | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 750 | 800 | 900 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 100           | 8         | 9   | 9   | 9   | 9   |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 200           | 9         | 9   | 10  | 10  | 11  | 11  | 12  | 12  | 13  | 14  | 14  | 14  |     |      |      |      |      |      |      |
| 250           |           | 10  | 10  | 11  | 11  | 12  | 12  | 13  | 13  | 15  | 15  | 16  | 17  | 18   |      |      |      |      |      |
| 300           |           |     | 11  | 11  | 12  | 13  | 13  | 14  | 14  | 16  | 16  | 17  | 18  | 19   | 22   |      |      |      |      |
| 350           |           |     |     | 12  | 12  | 13  | 14  | 15  | 15  | 17  | 17  | 18  | 20  | 21   | 24   | 27   |      |      |      |
| 400           |           |     |     |     | 13  | 14  | 15  | 15  | 16  | 18  | 19  | 19  | 21  | 22   | 26   | 29   | 32   |      |      |
| 450           |           |     |     |     |     | 15  | 15  | 16  | 17  | 19  | 20  | 21  | 22  | 24   | 27   | 31   | 34   | 38   |      |
| 500           |           |     |     |     |     |     | 16  | 17  | 18  | 20  | 21  | 22  | 24  | 26   | 29   | 33   | 37   | 41   | 44   |
| 600           |           |     |     |     |     |     |     |     | 20  | 22  | 23  | 24  | 26  | 29   | 33   | 37   | 42   | 46   | 50   |
| 700           |           |     |     |     |     |     |     |     |     | 24  | 25  |     | 27  | 29   | 32   | 37   | 42   | 47   | 52   |
| 800           |           |     |     |     |     |     |     |     |     |     |     | 29  | 32  | 35   | 40   | 46   | 52   | 57   | 63   |
| 900           |           |     |     |     |     |     |     |     |     |     |     |     | 35  | 38   | 44   | 50   | 57   | 63   | 69   |
| 1000          |           |     |     |     |     |     |     |     |     |     |     |     |     | 41   | 48   | 55   | 61   | 68   | 75   |
| 1100          |           |     |     |     |     |     |     |     |     |     |     |     |     |      | 51   | 59   | 66   | 74   | 81   |
| 1200          |           |     |     |     |     |     |     |     |     |     |     |     |     |      | 55   | 63   | 71   | 79   | 87   |

Notes:

1. All dimensions are in mm.

Weight NL terminals (excl. controls, enclosure and attenuator)

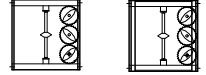
| Height | Width (W) |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|--------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| (H)    | 200       | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 700 | 750 | 800 | 900 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 |
| 100    | 11        | 11  | 12  | 12  | 13  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 200    | 12        | 12  | 13  | 14  | 15  | 15  | 16  | 17  | 18  | 19  | 20  | 21  |     |      |      |      |      |      |      |
| 250    |           | 13  | 14  | 15  | 16  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 24  | 25   |      |      |      |      |      |
| 300    |           |     | 15  | 16  | 16  | 17  | 18  | 19  | 20  | 22  | 23  | 24  | 25  | 27   | 31   |      |      |      |      |
| 350    |           |     |     | 16  | 17  | 18  | 19  | 20  | 21  | 23  | 24  | 25  | 27  | 29   | 33   | 37   |      |      |      |
| 400    |           |     |     |     | 18  | 19  | 20  | 21  | 22  | 24  | 25  | 27  | 29  | 31   | 35   | 39   | 43   |      |      |
| 450    |           |     |     |     |     | 20  | 21  | 22  | 24  | 26  | 27  | 28  | 30  | 33   | 37   | 42   | 46   | 51   |      |
| 500    |           |     |     |     |     |     | 22  | 23  | 25  | 27  | 28  | 30  | 32  | 34   | 39   | 44   | 49   | 54   | 58   |
| 600    |           |     |     |     |     |     |     |     | 27  | 30  | 31  | 33  | 35  | 38   | 43   | 49   | 54   | 60   | 65   |
| 700    |           |     |     |     |     |     |     |     |     | 32  | 34  | 35  | 39  | 42   | 48   | 54   | 60   | 66   | 72   |
| 800    |           |     |     |     |     |     |     |     |     |     |     | 38  | 42  | 45   | 52   | 59   | 65   | 72   | 79   |
| 900    |           |     |     |     |     |     |     |     |     |     |     |     | 45  | 49   | 56   | 63   | 71   | 78   | 85   |
| 1000   |           |     |     |     |     |     |     |     |     |     |     |     |     | 52   | 60   | 68   | 76   | 84   | 92   |
| 1100   |           |     |     |     |     |     |     |     |     |     |     |     |     |      | 64   | 73   | 82   | 90   | 99   |
| 1200   |           |     |     |     |     |     |     |     |     |     |     |     |     |      | 69   | 78   | 87   | 96   | 105  |

Notes:

1. All dimensions are in mm.

## Sound data

Type NK OAOB (single wall)  
NLOAOB (double wall)

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

| Model     | inlet spigot |      |            |       | min.<br>D p <sub>s</sub> | discharge sound                    |        |        |         |         |         |            | radiated sound single wall |                                    |        |        |         |         | radiated sound double wall |           |    |                                    |        |        |         |         |         |           |    |    |
|-----------|--------------|------|------------|-------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|------------|----------------------------|------------------------------------|--------|--------|---------|---------|----------------------------|-----------|----|------------------------------------|--------|--------|---------|---------|---------|-----------|----|----|
|           | velocity     |      | air volume |       |                          | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         |         |         | Lp waarden |                            | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         |         |                            | Lp values |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         |         |         | Lp values |    |    |
|           |              |      |            |       |                          | 125 Hz                             | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz |            |                            | 125 Hz                             | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz                    |           |    | 125 Hz                             | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz |           |    |    |
|           | m/s          | l/s  | CFM        | m³/h  |                          | Pa                                 | dB     |        |         |         |         |            | dB(A)                      | NC                                 | NR     | dB     |         |         |                            |           |    | dB                                 |        |        |         |         |         |           |    |    |
| 200 x 100 | 2            | 40   | 85         | 144   | 1                        | 50                                 | 44     | 42     | 42      | 45      | 47      | 22         | --                         | --                                 | 26     | 25     | 18      | -       | -                          | -         | 22 | 21                                 | -      | -      | -       | --      | --      |           |    |    |
|           | 4            | 80   | 169        | 288   | 6                        | 58                                 | 53     | 50     | 40      | 47      | 46      | 29         | 22                         | 24                                 | 36     | 37     | 32      | 24      | 21                         | 22        | 32 | 33                                 | 28     | 20     | 17      | -       | --      |           |    |    |
|           | 6            | 120  | 254        | 432   | 13                       | 66                                 | 59     | 54     | 52      | 50      | 49      | 36         | 33                         | 33                                 | 38     | 39     | 34      | 28      | 24                         | 26        | 34 | 35                                 | 30     | 24     | 20      | 20      | --      |           |    |    |
|           | 8            | 160  | 339        | 576   | 23                       | 72                                 | 63     | 58     | 55      | 53      | 52      | 42         | 41                         | 40                                 | 37     | 38     | 31      | 26      | 24                         | 26        | 28 | 33                                 | 34     | 27     | 22      | 20      | 20      | --        |    |    |
|           | 10           | 200  | 424        | 720   | 35                       | 76                                 | 67     | 61     | 57      | 55      | 54      | 40         | 46                         | 45                                 | 39     | 37     | 30      | 26      | 24                         | 27        | 29 | --                                 | 35     | 33     | 26      | 22      | 22      | 20        | -- |    |
| 350 x 200 | 2            | 140  | 296        | 504   | 1                        | 49                                 | 47     | 48     | 50      | 52      | 53      | 24         | 21                         | 24                                 | 31     | 30     | 24      | -       | -                          | -         | -- | 27                                 | 26     | 20     | -       | -       | --      | --        |    |    |
|           | 4            | 280  | 593        | 1008  | 6                        | 59                                 | 55     | 54     | 53      | 52      | 50      | 31         | 23                         | 25                                 | 42     | 42     | 38      | 30      | 27                         | 27        | 21 | --                                 | 38     | 38     | 34      | 26      | 23      | 21        | -- |    |
|           | 6            | 420  | 889        | 1512  | 13                       | 65                                 | 60     | 57     | 56      | 55      | 54      | 36         | 31                         | 32                                 | 43     | 44     | 39      | 33      | 30                         | 31        | 23 | --                                 | 39     | 40     | 35      | 29      | 26      | 25        | -- |    |
|           | 8            | 560  | 1186       | 2016  | 23                       | 69                                 | 64     | 60     | 58      | 57      | 56      | 40         | 37                         | 37                                 | 42     | 43     | 37      | 31      | 29                         | 31        | 21 | 21                                 | --     | 38     | 39      | 32      | 27      | 25        | 25 | -- |
|           | 10           | 700  | 1482       | 2520  | 35                       | 73                                 | 67     | 63     | 60      | 59      | 58      | 44         | 42                         | 41                                 | 44     | 43     | 36      | 31      | 31                         | 33        | 22 | --                                 | --     | 40     | 39      | 32      | 27      | 27        | 27 | -- |
| 400 x 400 | 2            | 320  | 678        | 1152  | 1                        | 51                                 | 51     | 52     | 55      | 56      | 56      | 28         | 24                         | 26                                 | 35     | 34     | 27      | -       | -                          | -         | -- | --                                 | 31     | 30     | 23      | -       | -       | --        | -- |    |
|           | 4            | 640  | 1355       | 2304  | 6                        | 60                                 | 58     | 56     | 56      | 54      | 52      | 33         | 26                         | 28                                 | 45     | 46     | 41      | 33      | 30                         | 31        | 25 | --                                 | 20     | 41     | 42      | 37      | 29      | 26        | 25 | 21 |
|           | 6            | 960  | 2033       | 3456  | 13                       | 65                                 | 62     | 60     | 59      | 58      | 57      | 37         | 31                         | 32                                 | 47     | 48     | 43      | 37      | 34                         | 35        | 27 | 20                                 | 23     | 43     | 44      | 39      | 33      | 30        | 29 | 23 |
|           | 8            | 1280 | 2711       | 4608  | 23                       | 69                                 | 65     | 63     | 61      | 60      | 59      | 41         | 37                         | 37                                 | 46     | 47     | 40      | 35      | 33                         | 35        | 25 | --                                 | 21     | 42     | 43      | 36      | 31      | 29        | 29 | 21 |
|           | 10           | 1600 | 3388       | 5760  | 35                       | 73                                 | 68     | 65     | 63      | 62      | 61      | 44         | 42                         | 41                                 | 44     | 46     | 39      | 35      | 35                         | 36        | 25 | --                                 | 21     | 44     | 42      | 35      | 31      | 31        | 30 | 21 |
| 500 x 400 | 2            | 400  | 847        | 1440  | 1                        | 52                                 | 52     | 54     | 56      | 57      | 56      | 29         | 24                         | 26                                 | 35     | 34     | 28      | -       | -                          | -         | -- | --                                 | 31     | 30     | 24      | -       | -       | --        | -- |    |
|           | 4            | 800  | 1694       | 2880  | 6                        | 61                                 | 59     | 57     | 56      | 55      | 53      | 34         | 27                         | 29                                 | 45     | 46     | 42      | 34      | 31                         | 32        | 25 | --                                 | 20     | 41     | 42      | 38      | 30      | 27        | 26 | 21 |
|           | 6            | 1200 | 2541       | 4320  | 13                       | 66                                 | 62     | 61     | 60      | 59      | 57      | 38         | 33                         | 33                                 | 47     | 48     | 43      | 38      | 34                         | 36        | 27 | 20                                 | 23     | 43     | 44      | 39      | 34      | 30        | 30 | 23 |
|           | 8            | 1600 | 3388       | 5760  | 23                       | 69                                 | 66     | 63     | 62      | 61      | 60      | 41         | 37                         | 37                                 | 46     | 47     | 40      | 36      | 34                         | 36        | 25 | --                                 | 21     | 42     | 43      | 36      | 32      | 30        | 30 | 21 |
|           | 10           | 2000 | 4235       | 7200  | 35                       | 73                                 | 68     | 65     | 64      | 63      | 62      | 44         | 42                         | 41                                 | 44     | 46     | 40      | 36      | 36                         | 37        | 26 | --                                 | 21     | 44     | 42      | 36      | 32      | 32        | 31 | 22 |
| 600 x 400 | 2            | 480  | 1016       | 1728  | 1                        | 53                                 | 53     | 55     | 57      | 58      | 57      | 30         | 25                         | 27                                 | 35     | 34     | 28      | -       | 17                         | 17        | -- | --                                 | 31     | 30     | 24      | -       | -       | --        | -- |    |
|           | 4            | 960  | 2033       | 3456  | 6                        | 61                                 | 59     | 58     | 57      | 56      | 53      | 34         | 27                         | 29                                 | 45     | 46     | 42      | 35      | 32                         | 33        | 25 | --                                 | 20     | 41     | 42      | 38      | 31      | 28        | 27 | 21 |
|           | 6            | 1440 | 3049       | 5184  | 13                       | 66                                 | 63     | 61     | 60      | 59      | 58      | 38         | 33                         | 33                                 | 47     | 48     | 43      | 38      | 35                         | 37        | 27 | 20                                 | 23     | 43     | 44      | 39      | 34      | 31        | 31 | 23 |
|           | 8            | 1920 | 4066       | 6912  | 23                       | 70                                 | 66     | 64     | 63      | 62      | 61      | 42         | 38                         | 38                                 | 46     | 47     | 41      | 37      | 34                         | 36        | 25 | --                                 | 21     | 42     | 43      | 37      | 33      | 30        | 30 | 21 |
|           | 10           | 2400 | 5082       | 8640  | 35                       | 73                                 | 68     | 66     | 65      | 64      | 63      | 44         | 42                         | 41                                 | 44     | 46     | 40      | 37      | 37                         | 38        | 26 | --                                 | 21     | 44     | 42      | 36      | 33      | 33        | 32 | 22 |
| 800 x 400 | 2            | 640  | 1355       | 2304  | 1                        | 54                                 | 55     | 57     | 59      | 59      | 57      | 31         | 25                         | 27                                 | 35     | 34     | 29      | 18      | 18                         | 19        | -- | --                                 | 31     | 30     | 25      | -       | -       | --        | -- |    |
|           | 4            | 1280 | 2711       | 4608  | 6                        | 62                                 | 60     | 59     | 58      | 57      | 54      | 35         | 28                         | 30                                 | 45     | 46     | 42      | 36      | 33                         | 34        | 25 | --                                 | 20     | 41     | 42      | 38      | 32      | 29        | 28 | 21 |
|           | 6            | 1920 | 4066       | 6912  | 13                       | 66                                 | 64     | 62     | 61      | 60      | 59      | 39         | 33                         | 35                                 | 47     | 48     | 44      | 40      | 37                         | 38        | 27 | 20                                 | 23     | 43     | 44      | 40      | 36      | 33        | 32 | 23 |
|           | 8            | 2560 | 5421       | 9216  | 23                       | 70                                 | 67     | 65     | 64      | 63      | 61      | 42         | 38                         | 38                                 | 46     | 47     | 41      | 38      | 36                         | 38        | 26 | --                                 | 21     | 42     | 43      | 37      | 34      | 32        | 32 | 22 |
|           | 10           | 3200 | 6776       | 11520 | 35                       | 73                                 | 69     | 67     | 66      | 65      | 64      | 45         | 42                         | 41                                 | 44     | 46     | 40      | 38      | 38                         | 39        | 26 | --                                 | 21     | 44     | 42      | 36      | 34      | 34        | 33 | 22 |
| 900 x 450 | 2            | 810  | 1715       | 2916  | 1                        | 55                                 | 56     | 58     | 60      | 60      | 58      | 32         | 26                         | 28                                 | 35     | 34     | 29      | 19      | 19                         | 20        | -- | --                                 | 31     | 30     | 25      | -       | -       | --        | -- |    |
|           | 4            | 1620 | 3431       | 5832  | 6                        | 62                                 | 61     | 60     | 59      | 57      | 54      | 36         | 29                         | 31                                 | 45     | 46     | 43      | 37      | 34                         | 35        | 25 | --                                 | 20     | 41     | 42      | 39      | 33      | 30        | 29 | 21 |
|           | 6            | 2430 | 5146       | 8748  | 13                       | 67                                 | 65     | 63     | 62      | 61      | 59      | 40         | 34                         | 36                                 | 47     | 48     | 44      | 41      | 38                         | 39        | 27 | 20                                 | 23     | 43     | 44      | 40      | 37      | 34        | 33 | 23 |
|           | 8            | 3240 | 6861       | 11664 | 23                       | 70                                 | 67     | 66     | 65      | 64      | 62      | 42         | 38                         | 38                                 | 46     | 47     | 42      | 39      | 37                         | 39        | 26 | --                                 | 21     | 42     | 43      | 38      | 35      | 33        | 33 | 22 |
|           | 10           | 4050 | 8576       | 14580 | 35                       | 73                                 | 70     | 68     | 67      | 66      | 64      | 45         | 42                         | 41                                 | 44     | 46     | 41      | 39      | 39                         | 40        | 26 | --                                 | 21     | 44     | 42      | 37      | 35      | 35        | 34 | 22 |

1. Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards.
2. L<sub>w</sub> 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 referred to 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

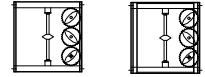
- referred to in table 1 for ceiling plenum and suspended ceiling absorption.
5. Lp values are including a room absorption of 10 dB/Oct.
6. dB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "-".
7.  $\Delta p_s$  is static pressure drop across VAV air volume control terminal with damper fully open.
8. Sound data indicated by "X" are not provided as minimum required static pressure drop is more than the given pressure drop.
9. For non standard applications and/or selections, please contact our technical staff.

Table 1: Assumptions for additional attenuation

| dB             | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|----------------|----|-----|-----|-----|------|------|------|
| Discharge (dB) |    | 5   | 10  | 20  | 30   | 30   | 25   |
| Radiated (dB)  |    | 2   | 5   | 10  | 15   | 15   | 20   |

## Sound data

Type NK0A00B (single wall)  
NLOA00B (double wall)



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

| Model       | inlet spigot |            |                                    |        | min.<br>D p <sub>a</sub> | discharge sound |                   |         |           |       |                                    |    |        | radiated sound single wall |        |         |           |         |                                    |    |    | radiated sound double wall |        |        |           |         |         |       |    |    |   |   |
|-------------|--------------|------------|------------------------------------|--------|--------------------------|-----------------|-------------------|---------|-----------|-------|------------------------------------|----|--------|----------------------------|--------|---------|-----------|---------|------------------------------------|----|----|----------------------------|--------|--------|-----------|---------|---------|-------|----|----|---|---|
|             | velocity     | air volume | L <sub>w</sub> in dB/Oct. (re 1pW) |        |                          |                 |                   |         | Lp values |       | L <sub>w</sub> in dB/Oct. (re 1pW) |    |        |                            |        |         | Lp values |         | L <sub>w</sub> 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 |   |   |
|             |              |            | dB                                 |        |                          |                 |                   |         | dB        |       |                                    | dB |        |                            |        |         |           | dB      |                                    |    | dB |                            |        |        |           |         | dB      |       |    |    |   |   |
|             |              |            | m/s                                | l/s    |                          | CFM             | m <sup>3</sup> /h | Pa      | dB        |       |                                    |    |        |                            | dB     |         |           | dB      |                                    |    |    |                            |        | dB     |           |         | dB      |       |    |    |   |   |
| 1000 x 500  | 2            | 1000       | 2118                               | 3600   | 1                        | 56              | 57                | 59      | 61        | 61    | 58                                 | 33 | 26     | 28                         | 35     | 34      | 29        | 20      | 20                                 | 21 | -  | -                          | -      | 31     | 30        | 25      | -       | -     | -  | -  | - | - |
|             | 4            | 2000       | 4235                               | 7200   | 6                        | 63              | 62                | 61      | 60        | 58    | 55                                 | 37 | 30     | 32                         | 45     | 46      | 43        | 38      | 35                                 | 36 | 26 | -                          | 20     | 41     | 42        | 39      | 34      | 31    | 30 | 22 | - | - |
|             | 6            | 3000       | 6353                               | 10800  | 13                       | 67              | 65                | 64      | 63        | 62    | 60                                 | 40 | 34     | 36                         | 47     | 48      | 45        | 42      | 38                                 | 40 | 28 | 20                         | 23     | 43     | 44        | 41      | 38      | 34    | 34 | 24 | - | - |
|             | 8            | 4000       | 8471                               | 14400  | 23                       | 71              | 68                | 66      | 66        | 64    | 63                                 | 43 | 39     | 39                         | 46     | 47      | 42        | 40      | 38                                 | 40 | 26 | -                          | 21     | 42     | 43        | 38      | 36      | 34    | 34 | 22 | - | - |
|             | 10           | 5000       | 10588                              | 18000  | 35                       | 73              | 70                | 68      | 67        | 66    | 65                                 | 45 | 42     | 41                         | 48     | 46      | 41        | 40      | 40                                 | 41 | 26 | -                          | 21     | 44     | 42        | 37      | 36      | 36    | 35 | 22 | - | - |
| 1200 x 600  | 2            | 1440       | 3049                               | 5184   | 1                        | 58              | 59                | 61      | 63        | 62    | 58                                 | 34 | 27     | 29                         | 35     | 34      | 30        | 22      | 22                                 | 22 | -  | -                          | -      | 31     | 30        | 26      | 18      | 18    | -  | -  | - | - |
|             | 4            | 2880       | 6099                               | 10368  | 6                        | 64              | 63                | 62      | 61        | 59    | 55                                 | 38 | 32     | 33                         | 45     | 46      | 44        | 40      | 37                                 | 37 | 26 | -                          | 20     | 41     | 42        | 40      | 36      | 33    | 31 | 22 | - | - |
|             | 6            | 4320       | 9148                               | 15552  | 13                       | 68              | 66                | 65      | 64        | 63    | 60                                 | 41 | 35     | 37                         | 47     | 48      | 45        | 43      | 40                                 | 41 | 28 | 20                         | 23     | 43     | 44        | 41      | 39      | 36    | 35 | 24 | - | - |
|             | 8            | 5760       | 12198                              | 20736  | 23                       | 71              | 69                | 68      | 67        | 66    | 64                                 | 44 | 39     | 40                         | 46     | 47      | 43        | 41      | 39                                 | 41 | 26 | -                          | 21     | 42     | 43        | 39      | 37      | 35    | 35 | 22 | - | - |
|             | 10           | 7200       | 15247                              | 25920  | 35                       | 74              | 71                | 70      | 69        | 68    | 66                                 | 46 | 43     | 43                         | 48     | 46      | 42        | 41      | 42                                 | 43 | 27 | -                          | 21     | 44     | 42        | 38      | 37      | 38    | 37 | 23 | - | - |
| 1400 x 700  | 2            | 1960       | 4151                               | 7056   | 1                        | 59              | 61                | 63      | 64        | 63    | 58                                 | 36 | 29     | 31                         | 35     | 34      | 31        | 23      | 23                                 | 24 | -  | -                          | -      | 31     | 30        | 27      | 19      | 19    | 18 | -  | - | - |
|             | 4            | 3920       | 8301                               | 14112  | 6                        | 65              | 64                | 63      | 62        | 59    | 55                                 | 38 | 33     | 35                         | 45     | 46      | 44        | 41      | 38                                 | 39 | 26 | -                          | 20     | 41     | 42        | 40      | 37      | 34    | 33 | 22 | - | - |
|             | 6            | 5880       | 12452                              | 21168  | 13                       | 69              | 67                | 67      | 66        | 64    | 61                                 | 42 | 37     | 38                         | 47     | 48      | 46        | 45      | 41                                 | 43 | 29 | 20                         | 23     | 43     | 44        | 42      | 41      | 37    | 37 | 24 | - | - |
|             | 8            | 7840       | 16602                              | 28224  | 23                       | 72              | 70                | 69      | 68        | 67    | 64                                 | 45 | 41     | 41                         | 46     | 47      | 43        | 43      | 41                                 | 42 | 27 | -                          | 21     | 42     | 43        | 39      | 39      | 37    | 36 | 23 | - | - |
|             | 10           | 9800       | 20753                              | 35280  | 35                       | 75              | 72                | 71      | 70        | 69    | 67                                 | 47 | 45     | 44                         | 48     | 46      | 42        | 43      | 43                                 | 44 | 27 | -                          | 21     | 44     | 42        | 38      | 39      | 39    | 38 | 23 | - | - |
| 1600 x 800  | 2            | 2560       | 5421                               | 9216   | 1                        | 61              | 63                | 65      | 65        | 63    | 58                                 | 38 | 32     | 33                         | 35     | 34      | 31        | 24      | 24                                 | 25 | -  | -                          | -      | 31     | 30        | 27      | 20      | 20    | 19 | -  | - | - |
|             | 4            | 5120       | 10842                              | 18432  | 6                        | 66              | 65                | 64      | 63        | 60    | 56                                 | 39 | 34     | 36                         | 45     | 46      | 45        | 42      | 39                                 | 40 | 27 | -                          | 21     | 41     | 42        | 41      | 38      | 35    | 34 | 23 | - | - |
|             | 6            | 7680       | 16264                              | 27648  | 13                       | 70              | 68                | 68      | 66        | 65    | 61                                 | 43 | 38     | 39                         | 47     | 48      | 46        | 46      | 43                                 | 44 | 29 | 20                         | 23     | 43     | 44        | 42      | 42      | 39    | 38 | 25 | - | - |
|             | 8            | 10240      | 21685                              | 36864  | 23                       | 73              | 71                | 70      | 69        | 67    | 65                                 | 46 | 42     | 42                         | 46     | 47      | 44        | 44      | 42                                 | 44 | 27 | -                          | 21     | 42     | 43        | 40      | 40      | 38    | 38 | 23 | - | - |
|             | 10           | 12800      | 27106                              | 46080  | 35                       | 75              | 73                | 72      | 71        | 70    | 67                                 | 48 | 45     | 44                         | 48     | 46      | 43        | 44      | 44                                 | 45 | 28 | 20                         | 22     | 44     | 42        | 39      | 40      | 40    | 39 | 24 | - | - |
| 1800 x 900  | 2            | 3240       | 6861                               | 11664  | 1                        | 62              | 64                | 66      | 66        | 64    | 57                                 | 39 | 33     | 35                         | 35     | 34      | 31        | 25      | 25                                 | 26 | -  | -                          | -      | 31     | 30        | 27      | 21      | 21    | 20 | -  | - | - |
|             | 4            | 6480       | 13722                              | 23328  | 6                        | 67              | 66                | 65      | 63        | 60    | 56                                 | 40 | 35     | 37                         | 45     | 46      | 45        | 43      | 40                                 | 41 | 27 | -                          | 21     | 41     | 42        | 41      | 39      | 36    | 35 | 23 | - | - |
|             | 6            | 9720       | 20584                              | 34992  | 13                       | 71              | 69                | 68      | 67        | 65    | 62                                 | 44 | 39     | 40                         | 47     | 48      | 47        | 47      | 44                                 | 45 | 29 | 20                         | 23     | 43     | 44        | 43      | 43      | 40    | 39 | 25 | - | - |
|             | 8            | 12960      | 27445                              | 46656  | 23                       | 73              | 72                | 71      | 70        | 68    | 65                                 | 47 | 42     | 43                         | 46     | 47      | 44        | 45      | 43                                 | 45 | 28 | -                          | 21     | 42     | 43        | 40      | 41      | 39    | 39 | 24 | - | - |
|             | 10           | 16200      | 34306                              | 58320  | 35                       | 76              | 74                | 73      | 72        | 70    | 68                                 | 49 | 46     | 45                         | 48     | 46      | 43        | 45      | 45                                 | 46 | 28 | 21                         | 23     | 44     | 42        | 39      | 41      | 41    | 40 | 24 | - | - |
| 2000 x 1200 | 2            | 4800       | 10165                              | 17280  | 1                        | 64              | 66                | 68      | 67        | 64    | 56                                 | 40 | 35     | 37                         | 35     | 34      | 32        | 27      | 27                                 | 27 | -  | -                          | -      | 31     | 30        | 28      | 23      | 23    | 21 | -  | - | - |
|             | 4            | 9600       | 20329                              | 34560  | 6                        | 68              | 67                | 66      | 64        | 61    | 56                                 | 41 | 36     | 38                         | 45     | 46      | 46        | 45      | 42                                 | 43 | 28 | -                          | 22     | 41     | 42        | 42      | 41      | 38    | 37 | 24 | - | - |
|             | 6            | 14400      | 30494                              | 51840  | 13                       | 72              | 71                | 70      | 68        | 66    | 62                                 | 45 | 41     | 42                         | 47     | 48      | 47        | 48      | 45                                 | 47 | 30 | 22                         | 24     | 43     | 44        | 43      | 44      | 41    | 41 | 26 | - | - |
|             | 8            | 19200      | 40659                              | 69120  | 23                       | 74              | 73                | 72      | 71        | 69    | 66                                 | 48 | 43     | 44                         | 46     | 47      | 45        | 47      | 44                                 | 46 | 29 | 20                         | 23     | 42     | 43        | 41      | 43      | 40    | 40 | 24 | - | - |
|             | 10           | 24000      | 50824                              | 86400  | 35                       | 77              | 75                | 74      | 73        | 71    | 69                                 | 50 | 47     | 46                         | 48     | 46      | 44        | 47      | 47                                 | 48 | 29 | 23                         | 25     | 44     | 42        | 40      | 43      | 43    | 42 | 25 | - | - |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards.
- L<sub>w</sub> 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 referred to in table 1 for downstream ductwork including a diffuser with insulated plenum box.
- The radiated sound pressure levels are determined with the assumptions as

- referred to 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 "-".
- Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- Sound data indicated by "X" are not provided as minimum required static pressure drop is more than the given pressure drop.
- For non standard applications and/or selections, please contact our technical staff.

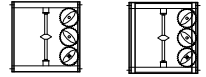
Table 1: Assumptions for additional attenuation

| dB             | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|----------------|----|-----|-----|-----|------|------|------|
| Discharge (dB) |    | 5   | 10  | 20  | 30   | 30   | 25   |
| Radiated (dB)  |    | 2   | 5   | 10  | 15   | 15   | 20   |



## Sound data

Type NK OAOB (single wall)  
NLOAOB (double wall)



Sound data  $\Delta p = 250 \text{ Pa}$

| Model     | inlaat zijde |       |            |       | min.<br>D p <sub>s</sub> | discharged sound                   |        |        |         |           |         |       |    | radiated sound single wall         |        |        |        |           |         |         |       | radiated sound double wall         |    |        |        |           |         |         |         |       |    |    |
|-----------|--------------|-------|------------|-------|--------------------------|------------------------------------|--------|--------|---------|-----------|---------|-------|----|------------------------------------|--------|--------|--------|-----------|---------|---------|-------|------------------------------------|----|--------|--------|-----------|---------|---------|---------|-------|----|----|
|           | velocity     |       | air volume |       |                          | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         | Lp values |         |       |    | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |        | Lp values |         |         |       | L <sub>w</sub> 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 |
|           | m/s          |       | l/s        |       |                          | dB                                 |        |        |         |           |         |       |    | dB                                 |        |        |        |           |         |         |       | dB                                 |    |        |        |           |         |         |         |       |    |    |
|           |              |       |            |       |                          |                                    |        |        |         |           |         |       |    |                                    |        |        |        |           |         |         |       |                                    |    |        |        |           |         |         |         |       |    |    |
| 200 x 100 | 2            | 40    | 85         | 144   | 1                        | 56                                 | 50     | 48     | 49      | 51        | 53      | 28    | 21 | 24                                 | 28     | 27     | 22     | -         | -       | -       | -     | -                                  | -  | 24     | 23     | 18        | -       | -       | -       | -     | -  |    |
|           | 4            | 80    | 169        | 288   | 6                        | 65                                 | 60     | 56     | 55      | 54        | 53      | 36    | 31 | 32                                 | 38     | 39     | 35     | 27        | 24      | 24      | -     | -                                  | -  | 34     | 35     | 31        | 23      | 20      | 18      | -     | -  |    |
|           | 6            | 120   | 254        | 432   | 13                       | 72                                 | 65     | 61     | 58      | 57        | 56      | 42    | 41 | 40                                 | 45     | 47     | 44     | 39        | 33      | 34      | 26    | 22                                 | 21 | 43     | 40     | 35        | 29      | 28      | 22      | -     | -  |    |
|           | 8            | 160   | 339        | 576   | 23                       | 78                                 | 70     | 64     | 61      | 59        | 58      | 48    | 49 | 47                                 | 46     | 48     | 45     | 41        | 35      | 36      | 27    | 20                                 | 23 | 42     | 44     | 41        | 37      | 31      | 30      | 22    | -  | -  |
| 350 x 200 | 2            | 140   | 296        | 504   | 1                        | 56                                 | 54     | 54     | 56      | 58        | 59      | 31    | 27 | 29                                 | 33     | 33     | 27     | -         | -       | -       | -     | -                                  | -  | 29     | 29     | 23        | -       | -       | -       | -     | -  |    |
|           | 4            | 280   | 593        | 1008  | 6                        | 66                                 | 62     | 60     | 59      | 58        | 57      | 38    | 33 | 33                                 | 44     | 45     | 40     | 33        | 29      | 30      | 24    | -                                  | -  | 40     | 41     | 36        | 29      | 25      | 24      | 20    | -  | -  |
|           | 6            | 420   | 889        | 1512  | 13                       | 71                                 | 67     | 64     | 63      | 62        | 61      | 43    | 39 | 39                                 | 50     | 53     | 50     | 44        | 39      | 39      | 32    | 25                                 | 28 | 46     | 49     | 46        | 40      | 35      | 33      | 28    | 21 | 23 |
|           | 8            | 560   | 1186       | 2016  | 23                       | 76                                 | 70     | 67     | 65      | 64        | 63      | 47    | 46 | 45                                 | 51     | 54     | 50     | 46        | 41      | 42      | 33    | 27                                 | 29 | 47     | 50     | 46        | 42      | 37      | 36      | 29    | 22 | 24 |
| 400 x 400 | 2            | 320   | 678        | 1152  | 1                        | 58                                 | 58     | 59     | 61      | 63        | 62      | 34    | 30 | 32                                 | 37     | 36     | 31     | 19        | 18      | 18      | -     | -                                  | -  | 33     | 32     | 27        | -       | -       | -       | -     | -  |    |
|           | 4            | 640   | 1355       | 2304  | 6                        | 67                                 | 64     | 63     | 62      | 61        | 59      | 39    | 34 | 35                                 | 47     | 48     | 44     | 36        | 33      | 33      | 27    | 20                                 | 23 | 43     | 44     | 40        | 32      | 29      | 27      | 23    | -  | -  |
|           | 6            | 960   | 2033       | 3456  | 13                       | 72                                 | 68     | 67     | 66      | 65        | 63      | 44    | 41 | 40                                 | 54     | 56     | 53     | 48        | 42      | 43      | 35    | 30                                 | 31 | 50     | 52     | 49        | 44      | 38      | 37      | 31    | 25 | 27 |
|           | 8            | 1280  | 2711       | 4608  | 23                       | 76                                 | 72     | 69     | 68      | 67        | 66      | 48    | 46 | 45                                 | 55     | 57     | 54     | 50        | 44      | 45      | 36    | 31                                 | 33 | 51     | 53     | 50        | 46      | 40      | 39      | 32    | 26 | 28 |
| 500 x 400 | 2            | 400   | 847        | 1440  | 1                        | 59                                 | 59     | 60     | 63      | 64        | 63      | 35    | 31 | 33                                 | 37     | 36     | 31     | 20        | 19      | 19      | -     | -                                  | -  | 33     | 32     | 27        | -       | -       | -       | -     | -  |    |
|           | 4            | 800   | 1694       | 2880  | 6                        | 67                                 | 65     | 64     | 63      | 62        | 60      | 40    | 34 | 36                                 | 47     | 48     | 44     | 37        | 34      | 34      | 27    | 20                                 | 23 | 43     | 44     | 40        | 33      | 30      | 28      | 23    | -  | -  |
|           | 6            | 1200  | 2541       | 4320  | 13                       | 72                                 | 69     | 67     | 66      | 65        | 64      | 44    | 41 | 40                                 | 54     | 56     | 53     | 48        | 42      | 43      | 36    | 30                                 | 31 | 50     | 52     | 50        | 45      | 39      | 38      | 32    | 25 | 27 |
|           | 8            | 1600  | 3388       | 5760  | 23                       | 76                                 | 72     | 70     | 69      | 68        | 67      | 48    | 46 | 45                                 | 55     | 57     | 54     | 51        | 45      | 46      | 37    | 31                                 | 33 | 51     | 53     | 50        | 47      | 41      | 40      | 33    | 26 | 28 |
| 600 x 400 | 2            | 2400  | 4235       | 7200  | 35                       | 79                                 | 75     | 72     | 71      | 70        | 69      | 51    | 50 | 48                                 | 54     | 56     | 52     | 49        | 44      | 46      | 35    | 29                                 | 31 | 50     | 52     | 48        | 46      | 40      | 40      | 31    | 25 | 27 |
|           | 4            | 480   | 1016       | 1728  | 1                        | 59                                 | 60     | 62     | 64      | 65        | 63      | 36    | 31 | 33                                 | 37     | 36     | 32     | 21        | 20      | 20      | -     | -                                  | -  | 33     | 32     | 28        | -       | -       | -       | -     | -  |    |
|           | 6            | 960   | 2033       | 3456  | 6                        | 68                                 | 66     | 65     | 64      | 62        | 60      | 41    | 35 | 37                                 | 47     | 48     | 45     | 38        | 34      | 35      | 27    | 20                                 | 23 | 43     | 44     | 41        | 34      | 30      | 29      | 23    | -  | -  |
|           | 8            | 1440  | 3049       | 5184  | 13                       | 72                                 | 70     | 68     | 67      | 66        | 64      | 45    | 41 | 41                                 | 54     | 56     | 54     | 50        | 44      | 45      | 36    | 30                                 | 31 | 50     | 52     | 50        | 46      | 40      | 39      | 32    | 25 | 27 |
| 800 x 400 | 2            | 1920  | 4066       | 6912  | 23                       | 76                                 | 73     | 71     | 69      | 69        | 67      | 48    | 46 | 45                                 | 55     | 57     | 54     | 52        | 46      | 47      | 37    | 31                                 | 33 | 51     | 53     | 50        | 48      | 42      | 41      | 33    | 26 | 28 |
|           | 4            | 3200  | 6776       | 11520 | 35                       | 80                                 | 76     | 74     | 72      | 71        | 70      | 52    | 51 | 49                                 | 54     | 56     | 53     | 52        | 46      | 48      | 36    | 29                                 | 31 | 50     | 52     | 49        | 48      | 42      | 42      | 32    | 25 | 27 |
|           | 6            | 4800  | 10166      | 17280 | 6                        | 68                                 | 67     | 66     | 65      | 63        | 61      | 42    | 36 | 38                                 | 47     | 48     | 45     | 39        | 36      | 36      | 28    | 20                                 | 23 | 43     | 44     | 41        | 35      | 32      | 30      | 24    | -  | -  |
|           | 8            | 6400  | 13555      | 23040 | 13                       | 73                                 | 70     | 69     | 68      | 67        | 65      | 45    | 42 | 41                                 | 54     | 56     | 54     | 51        | 45      | 46      | 36    | 30                                 | 31 | 50     | 52     | 50        | 47      | 41      | 40      | 32    | 25 | 27 |
| 900 x 450 | 2            | 2560  | 5421       | 9216  | 23                       | 77                                 | 73     | 72     | 70      | 70        | 68      | 49    | 47 | 46                                 | 55     | 57     | 55     | 53        | 47      | 48      | 37    | 31                                 | 33 | 51     | 53     | 51        | 49      | 43      | 42      | 33    | 26 | 28 |
|           | 4            | 5120  | 10842      | 18432 | 35                       | 80                                 | 76     | 74     | 72      | 71        | 70      | 52    | 51 | 49                                 | 54     | 56     | 53     | 52        | 46      | 48      | 36    | 29                                 | 31 | 50     | 52     | 49        | 48      | 42      | 42      | 32    | 25 | 27 |
|           | 6            | 7680  | 16263      | 27648 | 6                        | 69                                 | 68     | 67     | 66      | 64        | 61      | 43    | 38 | 39                                 | 47     | 48     | 46     | 40        | 37      | 37      | 28    | 20                                 | 23 | 43     | 44     | 42        | 36      | 33      | 31      | 24    | -  | -  |
|           | 8            | 10240 | 21684      | 36864 | 13                       | 73                                 | 71     | 70     | 69      | 68        | 66      | 46    | 42 | 42                                 | 54     | 56     | 55     | 52        | 46      | 47      | 36    | 30                                 | 31 | 50     | 52     | 51        | 48      | 42      | 41      | 32    | 25 | 27 |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards.
- L<sub>w</sub> 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 referred to in table 1 for downstream ductwork including a diffuser with insulated plenum box.
- The radiated sound pressure levels are determined with the assumptions as

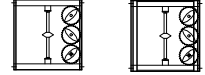
- referred to in table 1 for ceiling plenum and suspended ceiling absorption.
- Lp values are including a room absorption of 10 dB/Oct.
- dB(A), NC and NR index figures are sound pressure levels. Figures less than 20 are indicated by "-".
- Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- Sound data indicated by "X" are not provided as minimum required static pressure drop is more than the given pressure drop.
- For non standard applications and/or selections, please contact our technical staff.

Table 1: Assumptions for additional attenuation

| dB             | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|----------------|----|-----|-----|-----|------|------|------|
| Discharge (dB) |    | 5   | 10  | 20  | 30   | 30   | 25   |
| Radiated (dB)  |    | 2   | 5   | 10  | 15   | 15   | 20   |

## Sound data

Type NK0A00B (single wall)  
NLOA00B (double wall)



Sound data  $\Delta p = 250 \text{ Pa}$

| Model       | inlet spigot |       |            |                   | min.<br>D p <sub>s</sub> | discharge sound                    |        |        |         |         |         |           |    | radiated sound single wall |                                    |        |        |         |         |         |           | radiated sound double wall |    |                                    |        |        |         |         |         |           |    |    |  |
|-------------|--------------|-------|------------|-------------------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|-----------|----|----------------------------|------------------------------------|--------|--------|---------|---------|---------|-----------|----------------------------|----|------------------------------------|--------|--------|---------|---------|---------|-----------|----|----|--|
|             | velocity     |       | air volume |                   |                          | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         |         |         | Lp values |    |                            | L <sub>w</sub> in dB/Oct. (re 1pW) |        |        |         |         |         | Lp values |                            |    | L <sub>w</sub> 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 |  |
|             | m/s          | l/s   | CFM        | m <sup>3</sup> /h | Pa                       | dB                                 |        |        |         |         |         | dB        |    |                            | dB                                 |        |        |         |         |         | dB        |                            |    | dB                                 |        |        |         |         |         | dB        |    |    |  |
| 1000 x 500  | 2            | 1000  | 2118       | 3600              | 1                        | 62                                 | 64     | 66     | 68      | 67      | 64      | 39        | 33 | 35                         | 37                                 | 36     | 33     | 24      | 23      | 23      | -         | -                          | -  | 33                                 | 32     | 29     | 20      | 19      | 17      | -         | -  | -  |  |
|             | 4            | 2000  | 4235       | 7200              | 6                        | 70                                 | 68     | 67     | 66      | 64      | 61      | 43        | 38 | 39                         | 47                                 | 48     | 46     | 41      | 38      | 38      | 28        | 20                         | 23 | 43                                 | 44     | 42     | 37      | 34      | 32      | 24        | -  | -  |  |
|             | 6            | 3000  | 6353       | 10800             | 13                       | 74                                 | 72     | 71     | 70      | 68      | 66      | 47        | 43 | 43                         | 54                                 | 56     | 55     | 53      | 47      | 48      | 37        | 30                         | 31 | 50                                 | 52     | 51     | 49      | 43      | 42      | 33        | 25 | 27 |  |
|             | 8            | 4000  | 8471       | 14400             | 23                       | 77                                 | 75     | 73     | 72      | 71      | 69      | 50        | 47 | 46                         | 55                                 | 57     | 56     | 55      | 49      | 50      | 38        | 31                         | 33 | 51                                 | 53     | 52     | 51      | 45      | 44      | 34        | 26 | 28 |  |
|             | 10           | 5000  | 10588      | 18000             | 35                       | 80                                 | 77     | 75     | 74      | 73      | 72      | 52        | 51 | 49                         | 54                                 | 56     | 54     | 54      | 48      | 50      | 36        | 29                         | 31 | 50                                 | 52     | 50     | 50      | 44      | 44      | 32        | 25 | 27 |  |
| 1200 x 600  | 2            | 1440  | 3049       | 5184              | 1                        | 64                                 | 66     | 68     | 69      | 69      | 65      | 41        | 35 | 37                         | 37                                 | 36     | 33     | 25      | 25      | 25      | -         | -                          | -  | 33                                 | 32     | 29     | 21      | 21      | 19      | -         | -  | -  |  |
|             | 4            | 2880  | 6099       | 10368             | 6                        | 71                                 | 70     | 69     | 67      | 65      | 62      | 44        | 40 | 41                         | 47                                 | 48     | 47     | 43      | 39      | 40      | 28        | 20                         | 23 | 43                                 | 44     | 43     | 39      | 35      | 34      | 24        | -  | -  |  |
|             | 6            | 4320  | 9148       | 15552             | 13                       | 75                                 | 73     | 72     | 71      | 70      | 67      | 48        | 45 | 44                         | 54                                 | 56     | 56     | 55      | 49      | 50      | 37        | 30                         | 32 | 50                                 | 52     | 52     | 51      | 45      | 44      | 33        | 26 | 28 |  |
|             | 8            | 5760  | 12198      | 20736             | 23                       | 78                                 | 76     | 74     | 73      | 72      | 70      | 51        | 49 | 47                         | 55                                 | 57     | 56     | 56      | 51      | 52      | 38        | 31                         | 33 | 51                                 | 53     | 52     | 52      | 47      | 46      | 34        | 26 | 28 |  |
|             | 10           | 7200  | 15247      | 25920             | 35                       | 81                                 | 78     | 76     | 75      | 74      | 73      | 53        | 52 | 51                         | 54                                 | 56     | 54     | 55      | 50      | 52      | 37        | 29                         | 31 | 50                                 | 52     | 50     | 51      | 46      | 46      | 33        | 25 | 27 |  |
| 1400 x 700  | 2            | 1960  | 4151       | 7056              | 1                        | 66                                 | 68     | 70     | 71      | 69      | 65      | 43        | 38 | 39                         | 37                                 | 36     | 34     | 27      | 26      | 26      | -         | -                          | -  | 33                                 | 32     | 30     | 23      | 22      | 20      | -         | -  | -  |  |
|             | 4            | 3920  | 8301       | 14112             | 6                        | 72                                 | 71     | 70     | 68      | 66      | 62      | 45        | 41 | 42                         | 47                                 | 48     | 47     | 44      | 41      | 41      | 29        | 21                         | 23 | 43                                 | 44     | 43     | 40      | 37      | 35      | 25        | -  | -  |  |
|             | 6            | 5880  | 12452      | 21168             | 13                       | 76                                 | 74     | 73     | 72      | 71      | 67      | 49        | 46 | 45                         | 54                                 | 56     | 56     | 56      | 50      | 51      | 38        | 31                         | 32 | 50                                 | 52     | 52     | 52      | 46      | 45      | 34        | 26 | 28 |  |
|             | 8            | 7840  | 16602      | 28224             | 23                       | 79                                 | 77     | 76     | 75      | 73      | 71      | 52        | 50 | 48                         | 55                                 | 57     | 57     | 58      | 52      | 53      | 39        | 31                         | 34 | 51                                 | 53     | 53     | 54      | 48      | 47      | 35        | 27 | 30 |  |
|             | 10           | 9800  | 20753      | 35280             | 35                       | 81                                 | 79     | 77     | 76      | 75      | 73      | 54        | 52 | 51                         | 54                                 | 56     | 55     | 56      | 51      | 53      | 37        | 29                         | 31 | 50                                 | 52     | 51     | 52      | 47      | 47      | 34        | 26 | 28 |  |
| 1600 x 800  | 2            | 2560  | 5421       | 9216              | 1                        | 67                                 | 69     | 71     | 72      | 70      | 64      | 44        | 39 | 40                         | 37                                 | 36     | 34     | 28      | 27      | 27      | -         | -                          | -  | 33                                 | 32     | 30     | 24      | 23      | 21      | -         | -  | -  |  |
|             | 4            | 5120  | 10842      | 18432             | 6                        | 73                                 | 72     | 71     | 69      | 67      | 62      | 46        | 42 | 43                         | 47                                 | 48     | 48     | 45      | 42      | 42      | 29        | 21                         | 24 | 43                                 | 44     | 44     | 41      | 38      | 36      | 25        | -  | -  |  |
|             | 6            | 7680  | 16264      | 27648             | 13                       | 76                                 | 75     | 74     | 73      | 71      | 68      | 50        | 46 | 46                         | 54                                 | 56     | 56     | 57      | 51      | 52      | 38        | 31                         | 32 | 50                                 | 52     | 53     | 53      | 47      | 46      | 34        | 27 | 29 |  |
|             | 8            | 10240 | 21685      | 36864             | 23                       | 79                                 | 78     | 76     | 76      | 74      | 71      | 52        | 50 | 50                         | 55                                 | 57     | 57     | 59      | 53      | 54      | 40        | 32                         | 35 | 51                                 | 53     | 53     | 55      | 49      | 48      | 36        | 28 | 31 |  |
|             | 10           | 12800 | 27106      | 46080             | 35                       | 82                                 | 80     | 78     | 77      | 76      | 74      | 55        | 54 | 52                         | 54                                 | 56     | 55     | 58      | 52      | 54      | 38        | 31                         | 34 | 50                                 | 52     | 51     | 54      | 48      | 48      | 34        | 27 | 30 |  |
| 1800 x 900  | 2            | 3240  | 6861       | 11664             | 1                        | 69                                 | 71     | 73     | 73      | 70      | 64      | 46        | 41 | 42                         | 37                                 | 36     | 35     | 29      | 28      | 28      | -         | -                          | -  | 33                                 | 32     | 31     | 25      | 24      | 22      | -         | -  | -  |  |
|             | 4            | 6480  | 13722      | 23328             | 6                        | 74                                 | 73     | 72     | 70      | 67      | 62      | 47        | 43 | 44                         | 47                                 | 48     | 48     | 46      | 43      | 43      | 30        | 22                         | 24 | 43                                 | 44     | 44     | 42      | 39      | 37      | 26        | -  | 20 |  |
|             | 6            | 9720  | 20584      | 34992             | 13                       | 77                                 | 76     | 75     | 74      | 72      | 68      | 51        | 47 | 47                         | 54                                 | 56     | 57     | 58      | 52      | 53      | 39        | 32                         | 34 | 50                                 | 52     | 53     | 54      | 48      | 47      | 35        | 28 | 30 |  |
|             | 8            | 12960 | 27445      | 46656             | 23                       | 80                                 | 78     | 77     | 76      | 75      | 72      | 53        | 51 | 50                         | 55                                 | 57     | 58     | 60      | 54      | 55      | 40        | 33                         | 36 | 51                                 | 53     | 54     | 56      | 50      | 49      | 36        | 29 | 32 |  |
|             | 10           | 16200 | 34306      | 58320             | 35                       | 82                                 | 80     | 79     | 78      | 77      | 75      | 55        | 54 | 52                         | 54                                 | 56     | 56     | 59      | 54      | 55      | 39        | 32                         | 35 | 50                                 | 52     | 52     | 55      | 50      | 49      | 35        | 28 | 31 |  |
| 2000 x 1200 | 2            | 4800  | 10165      | 17280             | 1                        | 71                                 | 73     | 74     | 74      | 71      | 63      | 47        | 43 | 44                         | 37                                 | 36     | 36     | 31      | 30      | 30      | -         | -                          | -  | 33                                 | 32     | 32     | 27      | 26      | 24      | -         | -  | -  |  |
|             | 4            | 9600  | 20329      | 34560             | 6                        | 75                                 | 74     | 73     | 71      | 68      | 62      | 48        | 45 | 45                         | 47                                 | 48     | 49     | 48      | 44      | 45      | 30        | 22                         | 25 | 43                                 | 44     | 45     | 44      | 40      | 39      | 26        | -  | 21 |  |
|             | 6            | 14400 | 30494      | 51840             | 13                       | 78                                 | 77     | 76     | 75      | 73      | 68      | 52        | 49 | 48                         | 54                                 | 56     | 58     | 60      | 54      | 55      | 40        | 33                         | 36 | 50                                 | 52     | 54     | 56      | 50      | 49      | 36        | 29 | 32 |  |
|             | 8            | 19200 | 40659      | 69120             | 23                       | 81                                 | 80     | 79     | 78      | 76      | 72      | 55        | 52 | 52                         | 55                                 | 57     | 58     | 62      | 56      | 57      | 41        | 35                         | 38 | 51                                 | 53     | 54     | 58      | 52      | 51      | 37        | 31 | 34 |  |
|             | 10           | 24000 | 50824      | 86400             | 35                       | 83                                 | 82     | 81     | 80      | 78      | 75      | 57        | 55 | 54                         | 54                                 | 56     | 56     | 60      | 55      | 57      | 40        | 34                         | 36 | 50                                 | 52     | 52     | 56      | 51      | 51      | 36        | 30 | 32 |  |

- Sound data is determined in a reverberation room at an independent sound laboratory, according to ISO 3741 and ISO 5135 standards.
- L<sub>w</sub> 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 referred to in table 1 for downstream ductwork including a diffuser with insulated plenum box.
- The radiated sound pressure levels are determined with the assumptions as

- referred to 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 "-".
- Δps is static pressure drop across VAV air volume control terminal with damper fully open.
- Sound data indicated by "X" are not provided as minimum required static pressure drop is more than the given pressure drop.
- For non standard applications and/or selections, please contact our technical staff.

Table 1: Assumptions for additional attenuation

| dB             | Hz | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|----------------|----|-----|-----|-----|------|------|------|
| Discharge (dB) |    | 5   | 10  | 20  | 30   | 30   | 25   |
| Radiated (dB)  |    | 2   | 5   | 10  | 15   | 15   | 20   |

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