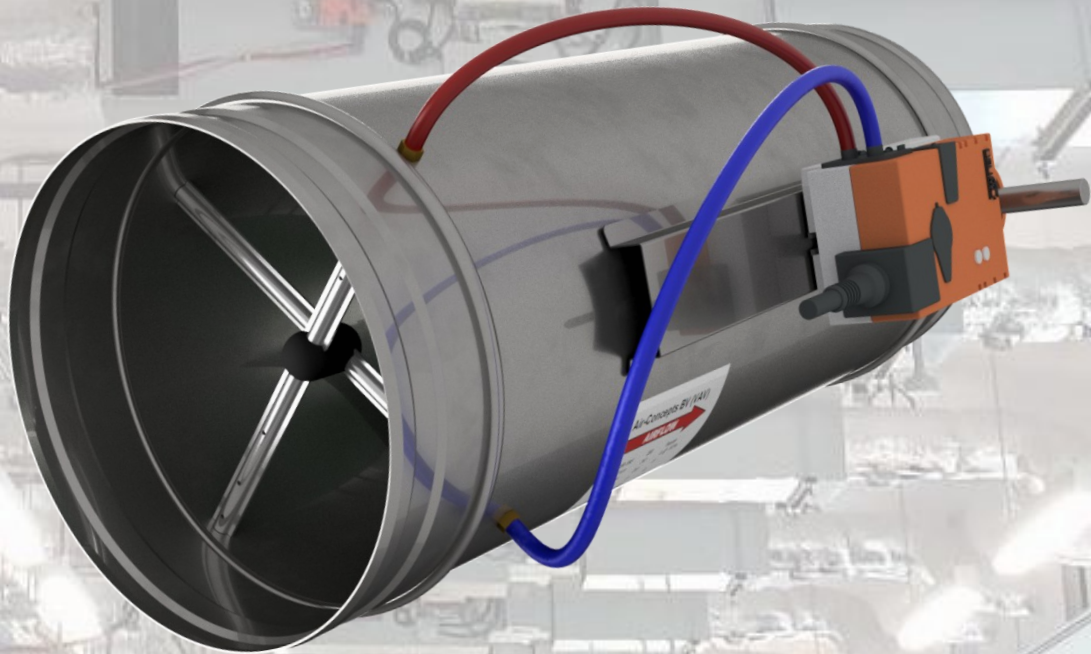


# 1.1.1 VSR-SW

Ronde VAV unit



AIRFLOW MEASUREMENT AND CONTROL

### Toepassingen

De ronde enkelwandige VAV units worden meestal toegepast in ventilatiesystemen om het comfort te verbeteren en het energieverbruik te verlagen. De primaire lucht is dan enkele graden onder de ruimtetemperatuur. Bij luchttemperaturen onder 15°C adviseren wij geïsoleerde units toe te passen of de unit uitwendig te isoleren.

De unit wordt geregeld door een ruimtesensor met temperatuur en/of CO2 of vanuit het gebouwbeheersysteem en varieert de luchthoeveelheid op basis van koelbehoefte en/of ventilatiebehoefte. Dit levert een aanzienlijke besparing op in ventilatorenergie omdat, bij weinig of geen koelvraag, de klep deels of zelfs geheel gesloten kan worden.

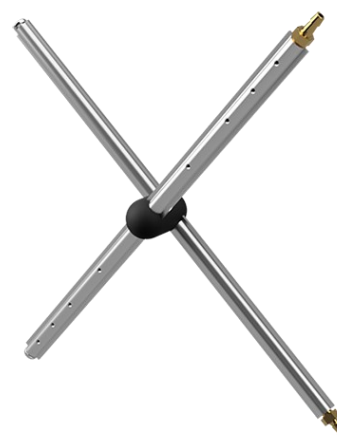
Dit type units worden tegenwoordig ook veel toegepast bij gestapelde woningbouw (appartementen) voor vraag gestuurde ventilatie op basis van CO2 of fijnstof concentratie.



VSR-SW-J3 ronde VAV unit met Johnson M4-CVM03050-0

### Kenmerken en voordelen

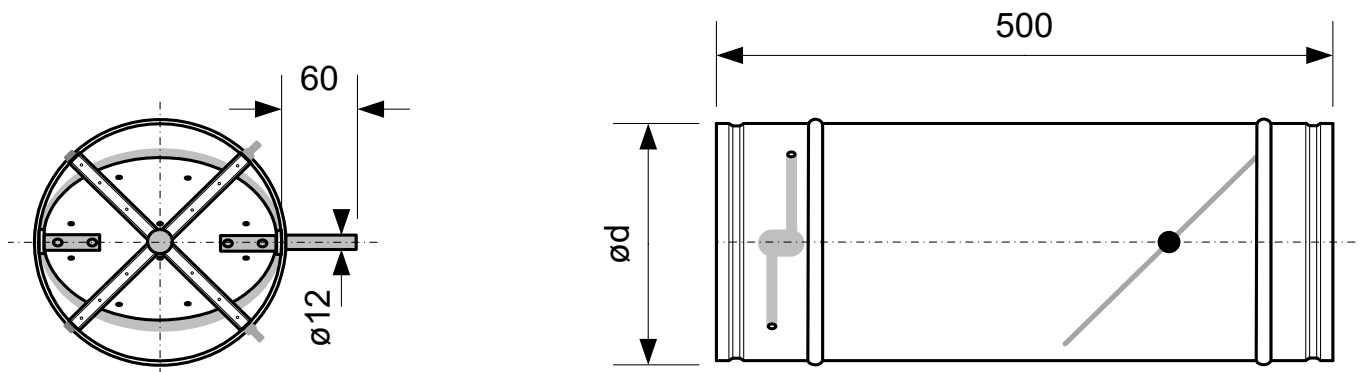
- Meetkruis: de FloXact™ heeft een lineaire versterkingsfactor van minimaal 2.5x, en meet over 6, 8 of 10 meetpunten volgens de Log-Tchebycheff methode. Vanwege de speciale profielvorm van de FloXact™ kan deze regelen vanaf 0.7 m/s inlaat snelheid en heeft een zeer groot regelbereik en een maximale afwijking van 2% bij 3xD rechte aanstroming.
- Behuizing: Magnelis staal (S235+ZM310). Dit staal met een moderne oppervlakte behandeling met een zeer hoge corrosiebestendigheid. Het is minder belastend voor het milieu en heeft een mooie uitstraling (vergelijkbaar met geanodiseerd aluminium). Luchtdichtheid Klasse-D volgens LUKA en EN-1751.
- Klepblad: sandwich constructie, 1.5mm SBR plaatrubber met inlage tussen 2 gegalvaniseerd stalen bladen. Luchtdichtklasse 3 volgens EN-1751.
- Regeling: Standaard leveren wij de VAV units zonder regelapparatuur of compleet met Belimo regelaars. Air-Concepts monteert ook toegeleverde regel apparatuur van derden zoals Priva, Johnson Controls, EasyIO, Distech, KMC, Sauter, Siemens, Honeywell, etc



FloXact luchtsnelheidsensor

### Kv Values FloXact-X®

|                        | units   | 100  | 125  | 160  | 200   | 250   | 315   | 355   | 400   | 450   |
|------------------------|---------|------|------|------|-------|-------|-------|-------|-------|-------|
| Kv Value               | l/s/Pa  | 5,23 | 8,89 | 15,6 | 25,5  | 41,3  | 67,5  | 86,8  | 111,3 | 142,2 |
|                        | m3/h/Pa | 18,8 | 32,0 | 56,2 | 91,9  | 148,8 | 243,0 | 312,3 | 400,7 | 511,8 |
| Vnom @ 150Pa           | l/s     | 64   | 109  | 191  | 313   | 506   | 827   | 1.063 | 1.363 | 1.741 |
|                        | m3/h    | 231  | 392  | 688  | 1.125 | 1.822 | 2.976 | 3.825 | 4.908 | 6.268 |
| Vnom @ 250Pa<br>(1"WC) | l/s     | 83   | 141  | 247  | 404   | 653   | 1.067 | 1.372 | 1.760 | 2.248 |
|                        | m3/h    | 298  | 506  | 888  | 1.453 | 2.352 | 3.842 | 4.938 | 6.336 | 8.093 |



Type VSR-SW (enkelwandig)

### Afmeting en gewicht (zonder controllers)

|        |    | 100  | 125   | 160   | 200   | 250   | 315   | 355   | 400   | 450   | 500   |
|--------|----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ød     | mm | ø 98 | ø 123 | ø 158 | ø 198 | ø 248 | ø 313 | ø 353 | ø 398 | ø 448 | ø 498 |
| L      | mm | 500  | 500   | 500   | 500   | 500   | 500   | 500   | 500   | 550   | 600   |
| VSR-DW | Kg | 1,3  | 1,6   | 2,0   | 2,6   | 3,4   | 4,6   | 5,3   | 6,2   | 7,3   | 8,5   |

### Accessoires / Optioneel

- De units worden standaard geleverd met bedienings-elementen aan de rechterkant (gezien in de luchtstroom-richting).
- Standaard bedieningselementen:
  - BE1 Belimo LMV-D3-MP. 5 Nm, 0-10 V met NFC
  - BEX Belimo LMV-D3-FLX. 5 Nm, 0-10 V zonder NFC
  - BEM Belimo LMV-D3-MOD. 5 Nm, MODbus/BACnet
  - BEB1 Belimo LMV-BAC-001. 5 Nm, ZoneEase BACnet
  - BEB2 Belimo LMV-BAC-002. 10 Nm, ZoneEase BACnet

De bovenstaande regelaars worden in de fabriek gemonteerd, gekalibreerd en, indien gewenst, voorzien van een locatielabel.

Indien gewenst kan Air-Concepts gratis controllers installeren. Wij hebben geschikte montageconsoles voor alle gangbare fabrikanten van controllers.

Transformator 230/24V AC (20 of 30VA)

Warmwaterkanaalverwarming 1-, 2- of 3-rijig. Type HWR

Kanaalkoeler 3-rijig. Type CWR

Elektrische kanaalverwarming. Type HER

Ronde geluiddempers type SAR



BEM (LMV-D3-MOD)



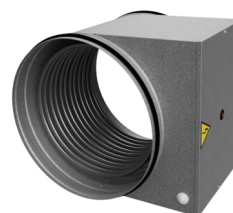
BEB2 (LMV-BAC-002)



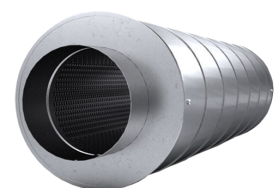
HWR



CWR



HER



SAR

## Bepalen luchthoeveelheid

Voor het goed functioneren van een VAV unit is het belangrijk dat 3 luchthoeveelheden worden bepaald nl;

- MAX Koeling.
- MIN koeling+ventilatie
- MIN verwarming.

### MAX (koeling)

Voor het bepalen van de "MAX" luchthoeveelheid wordt meestal uitgegaan van de maximale voelbare koellast. Voor het bepalen van de koellast zijn verscheidene berekeningsmethodes en softwarepakketten beschikbaar daarom wordt hierop niet verder ingegaan.

Het omrekenen van de koellast (in Watt) naar de "MAX-koeling" luchthoeveelheid (in m<sup>3</sup>/h) gaat met onderstaande formule:

$$P_{\text{voelb}} \text{ (W)} = m \text{ (kg/s)} \times C_p \text{ (J/kg.k)} \times \Delta T \text{ (}^{\circ}\text{C)}$$

of:

$$P_{\text{voelb}} \text{ (W)} = 0.33 \times V \text{ (m}^3\text{/h)} \times \Delta T \text{ (}^{\circ}\text{C)}$$

Dus:

$$V_{\text{max}} \text{ (m}^3\text{/h)} = 3 \times P_{\text{voelb}} \text{ (W)} / \Delta T \text{ (}^{\circ}\text{C)}$$

De  $\Delta T$  is het verschil tussen de inblaaslucht- en ruimteluchttemperatuur.

Voor een comfortabele luchtdistributie in de ruimte, zonder tocht, adviseren wij een maximaal verschil tussen de primaire- en ruimteluchttemperatuur van -8°C toe te passen.

Met de tabel "Koelcapaciteit" op pagina 9 kan de "MAX-Koeling" luchthoeveelheid en de bijbehorende unit model worden bepaald op basis van voelbare koellast, primaire- en ruimtetemperatuur.

Vanwege de huidige eisen voor gebouwisolatie en infiltratie is er ook koelvraag in de winter. Daarom wordt in de winter de primaire lucht meestal volgens een stooklijn geregeld van 16°C tot 20°C om ook aan de koelvraag te kunnen voldoen.

## MIN (koeling + ventilatie)

De "MIN" luchthoeveelheid wordt berekend op basis de minimaal benodigde ventilatie behoefte. De wettelijk vereiste minimale ventilatie is 35 m<sup>3</sup>/h voor een niet rokend persoon of 50 m<sup>3</sup>/h voor een roker.

Bij VAV systemen kan "MIN" meestal niet kleiner zijn dan 45-50% van "Max koeling" zonder risico op koudeval of een slechte doorspoeling van de ruimte.

Als (ook) een CO2 sensor wordt toegepast, kan worden gesignaleerd dat de ruimte niet bezet is of dat een raam openstaat. Dan kan de luchthoeveelheid verder worden terug geregeld waardoor er nog meer energie kan worden bespaard zonder vermindering van comfort.

## MIN (verwarming)

De "MIN-verwarming" luchthoeveelheid wordt berekend op basis van het transmissie verlies. Houd echter rekening met het aanwarmen van het gebouw na een periode van temperatuur verlaging zoals een weekend of vakantie periode.

Bij verwarming met lucht bestaat het risico van stratificatie waarbij de warme toevoerlucht niet goed mengt met de ruimtelucht en tegen het plafond blijft hangen. Om dit te voorkomen adviseren wij bij verwarming een maximaal verschil tussen de primaire- en ruimteluchttemperatuur van +8°C toe te passen bij minimaal 3 luchtwisselingen per uur.

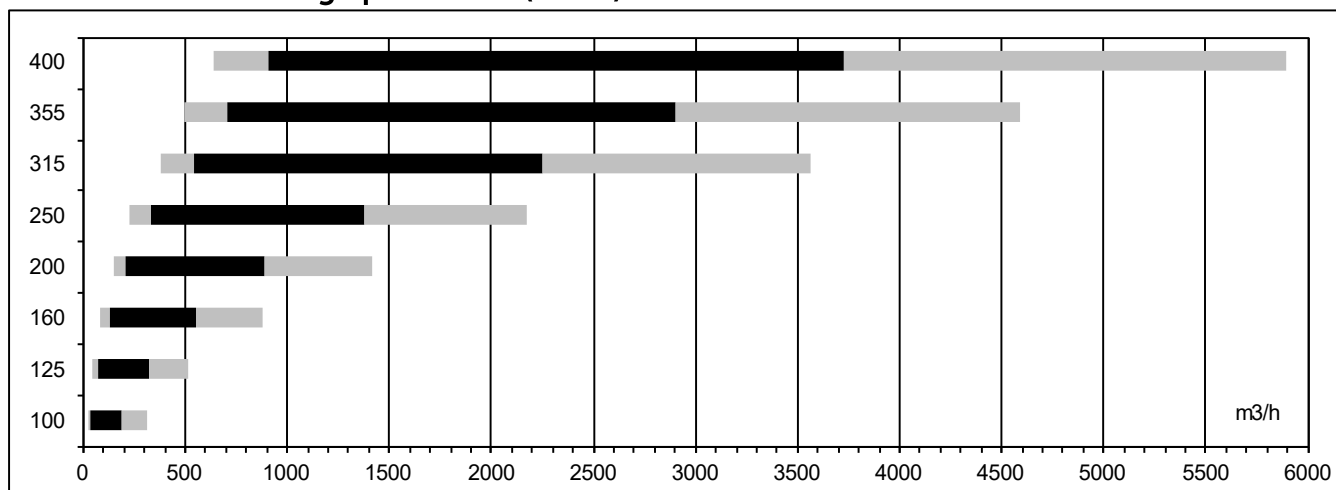
## Model selectie

Onze advies is om de VAV units dezelfde afmeting als het kanaal te kiezen, want een verloopstuk direct voor de unit geeft een afwijking op de FloXact meting.

Daarbij moet wel altijd gecontroleerd worden dat de luchtsnelheid bij MIN niet lager is dan 1,0 m/s, daar onder kan de regeling onnauwkeurig en instabiel worden.

Bij MAX controleren of de luchtsnelheid niet hoger is dan 8 m/s, daar boven kunnen geluidsklachten optreden.

## Aanbevolen luchtrange per model (m3/h)





## "Free Cooling"

Tijdens het "Free-Cooling" proces is het energie verbruik minimaal ( $COP > 50$ ), de koelmachines zijn uitgeschakeld en alleen de ventilatoren zijn in gebruik.

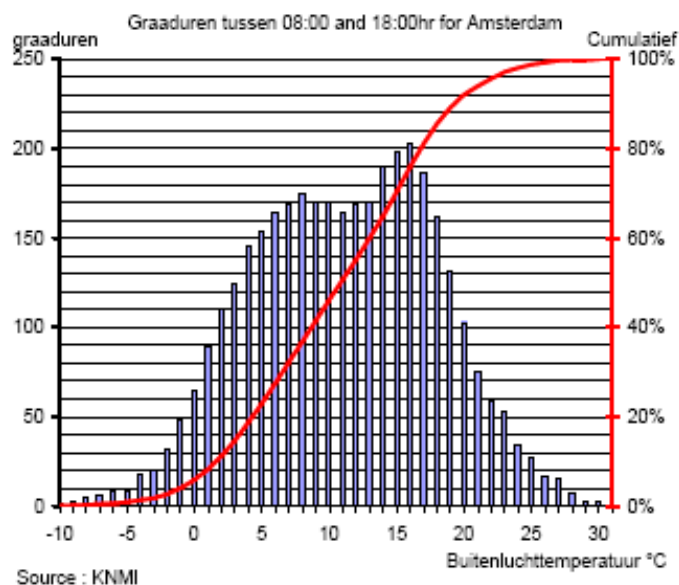
Uit historische klimaatgegevens van het KNMI blijkt dat, tijdens kantooruren (08:00-18:00) de buitentemperatuur gemiddeld 2500 uur per jaar lager is dan  $15^{\circ}\text{C}$ . Dit betekent dat bijna 50% van de tijd de "koude" buitenlucht direct gebruikt kan worden voor koeling van het gebouw. Als "vuistregel" geldt dat bij VAV systemen de koelmachines pas ingeschakeld hoeven te worden bij een buitenluchttemperatuur boven  $14^{\circ}\text{C}$ .

Door toepassing van een warmtewiel in combinatie met een VAV systeem is verwarming van de primaire lucht nagenoeg overbodig en 's zomers kan het warmtewiel gebruikt worden om de buitenlucht voor te koelen met retourlucht waardoor de koelmachine minder koeling hoeft te leveren.

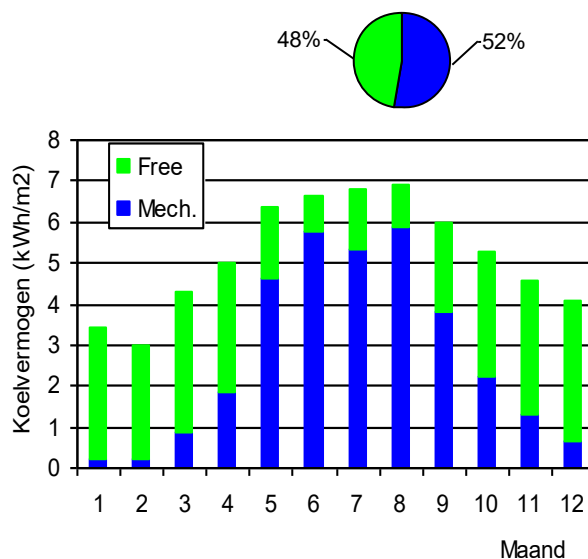
Grafiek-2 is een grafische weergave van het benodigde koelvermogen per  $\text{m}^2$  vloeroppervlak van een standaard kantoorgebouw. Het groene gedeelte is het koelvermogen wat verzorgd kan worden met "Free-Cooling" in combinatie met een VAV systeem.

Hieruit blijkt dat op jaarbasis bijna 50% van de koelbehoefte door "Free-Cooling" gedekt kan worden.

Uit deze grafiek is ook af te lezen dat moderne gebouwen gedurende het hele jaar koeling nodig hebben. In de winter komt dit voornamelijk door de lage zonnestand.



Grafiek 1



Grafiek 2

## "Nachtventilatie"

Het VAV systeem is ook uitstekend geschikt voor nachtventilatie. Hierbij wordt 's nachts met koude buitenlucht geventileerd en wordt koude opgeslagen in de gebouwmassa. Deze opgeslagen kou komt gedurende de dag weer vrij.

Uit onderzoek, gedaan door de BSRIA in Engeland, is gebleken dat nachtventilatie een aanzienlijke besparing oplevert als aan 1 of meer van de volgende criteria wordt voldaan:

- De piek binnentemperatuur is  $> 23^{\circ}\text{C}$
- De gemiddelde binnentemperatuur is  $> 22^{\circ}\text{C}$
- De gemiddelde buitentemperatuur na 12 uur  $> 20^{\circ}\text{C}$

Tevens moet aan de 2 onderstaande criteria worden voldaan:

- De binnentemperatuur is  $2^{\circ}\text{C}$  hoger dan de buitentemperatuur.
- De binnentemperatuur moet hoger zijn dan het verwarming setpoint (om te voorkomen dat de installatie gaat verwarmen).
- De minimale inblaasttemperatuur is  $12^{\circ}\text{C}$

**Geluiddata**

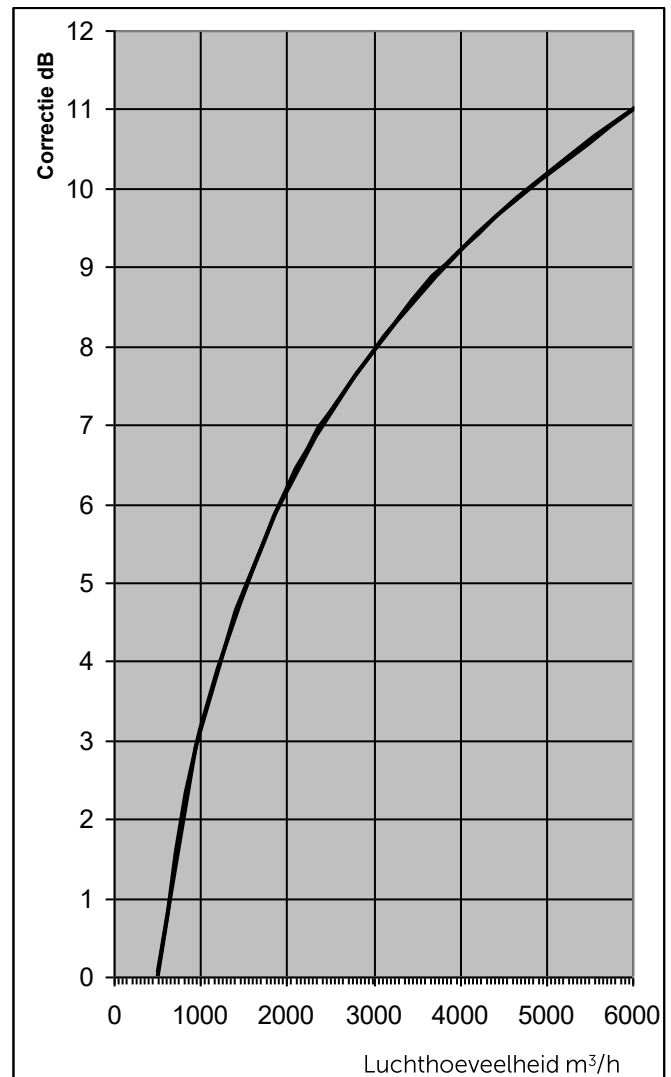
1. Voor de snel selectie voor luchtgeluid (LpA) is een ruimtedemping aangehouden van 7dB per Oktaafband en een kanaaldemping en eindreflectie van :

| 125 | 250 | 500 | 1k  | 2k  | 4k  | Hz |
|-----|-----|-----|-----|-----|-----|----|
| -3  | -5  | -10 | -15 | -15 | -12 | dB |

2. Voor de snel selectie voor luchtgeluid (LpA) is tevens rekening gehouden met geluidsdemping van het secundaire kanaalsysteem inclusief roosters en slangen. Deze demping is afhankelijk van de luchthoeveelheid. Zie tabel K1.
3. Voor de snel selectie voor afgestraald geluid (LpA) is een ruimtedemping van 7dB per Octaafband en de onderstaande waarden voor plafonddemping:

| 125 | 250 | 500 | 1k | 2k | 4k  | Hz |
|-----|-----|-----|----|----|-----|----|
| -1  | -3  | -5  | -7 | -7 | -10 | dB |

4. De geluidmetingen zijn uitgevoerd conform de richtlijnen in standaards ISO 3741 en ISO 5135.
5. Geluidvermogen Lw in dB per Octaafband zijn conform re  $10^{-12}$  Watt. Waarden onder 17 dB zijn als "-" weergegeven.
6. Het A gewogen geluidvermogen Lw(A) in dB per Octaafband zijn conform re  $10^{-12}$  Watt. Waarden onder 20 dB(A) zijn als "-" weergegeven.
7. n/a de geselecteerde drukval is lager dan de minimaal benodigde druk (min  $\Delta P_s$ ) om de unit correct te laten functioneren.
8. Ps Statistische druk.
9. Pt Totaal druk.
10. min  $\Delta P_s$ . Minimale drukverschil bij volledig geopende klep en luchthoeveelheid zoals in tabel weergegeven.

**Tabel K1: Correctie demping secundair kanaal**

| Model / Diameter | Lucht volume (m³/h) | Luchtsnelheid (m/s) | Min. P <sub>st</sub> (Pa) | Snelselectie<br>L <sub>p</sub> (A) in dB(A) |                                   |                                    | Luchtgeluid<br>enkel- en dubbelwandig |        |        |         |         |         |                          | Afgestraalgeluid<br>enkelwandig    |        |        |         |         |         | Afgestraalgeluid<br>dubbelwandig |                                    |        |        |         |         |         |                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------|---------------------|---------------------|---------------------------|---------------------------------------------|-----------------------------------|------------------------------------|---------------------------------------|--------|--------|---------|---------|---------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|----------------------------------|------------------------------------|--------|--------|---------|---------|---------|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                  |                     |                     |                           | Luchtgeluid zonder<br>geluidemper           | Afgestraald geluid<br>enkelwandig | Afgestraald geluid<br>dubbelwandig | Lw (dB/oct) re 10 <sup>-12</sup> W    |        |        |         |         |         | L <sub>w</sub> (A) dB(A) | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         | L <sub>w</sub> (A) dB(A)         | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         | L <sub>w</sub> (A) dB(A) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                  |                     |                     |                           |                                             |                                   |                                    | 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 |                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                  |                     |                     |                           |                                             |                                   |                                    |                                       |        |        |         |         |         |                          |                                    |        |        |         |         |         |                                  |                                    |        |        |         |         |         |                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 100              | 40                  | 1,5                 | 1                         | -                                           | -                                 | -                                  | 33                                    | 33     | 33     | 29      | 26      | 24      | 35                       | 19                                 | -      | -      | -       | -       | -       | 20                               | 18                                 | -      | -      | -       | -       | -       | -                        | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Model / Diameter | Lucht volume (m³/h) | Luchtsnelheid (m/s) | Min. P <sub>st</sub> (Pa) | Snelselectie<br>Lp(A) in dB(A)    |                                   |                                    | Luchtgeluid<br>enkel- en dubbelwandig |        |        |         |         |         |                          | Afgestraalgeluid<br>enkelwandig    |        |        |         |         |         |                          | Afgestraalgeluid<br>dubbelwandig   |        |        |         |         |         |    |
|------------------|---------------------|---------------------|---------------------------|-----------------------------------|-----------------------------------|------------------------------------|---------------------------------------|--------|--------|---------|---------|---------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|----|
|                  |                     |                     |                           | Luchtgeluid zonder<br>geluidemper | Afgestraald geluid<br>enkelwandig | Afgestraald geluid<br>dubbelwandig | Lw (dB/oct) re 10 <sup>-12</sup> W    |        |        |         |         |         | L <sub>w</sub> (A) dB(A) | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         | L <sub>w</sub> (A) dB(A) | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         |    |
|                  |                     |                     |                           |                                   |                                   |                                    | 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 |    |
|                  |                     |                     |                           |                                   |                                   |                                    |                                       |        |        |         |         |         |                          |                                    |        |        |         |         |         |                          |                                    |        |        |         |         |         |    |
| 100              | 40                  | 1,5                 | 1                         | 23                                | --                                | --                                 | 37                                    | 39     | 39     | 35      | 32      | 30      | 40                       | 23                                 | 22     | 23     | 18      | 21      | 19      | 27                       | 22                                 | 21     | 21     | -       | -       | -       | 23 |
|                  | 106                 | 4,0                 | 7                         | 30                                | 20                                | --                                 | 47                                    | 47     | 46     | 42      | 36      | 35      | 47                       | 33                                 | 30     | 30     | 25      | 26      | 24      | 33                       | 32                                 | 29     | 28     | 24      | 17      | 20      | 30 |
|                  | 160                 | 6,0                 | 16                        | 34                                | 23                                | 20                                 | 51                                    | 50     | 49     | 45      | 38      | 37      | 50                       | 37                                 | 33     | 33     | 28      | 28      | 26      | 35                       | 36                                 | 32     | 31     | 27      | 19      | 22      | 32 |
|                  | 213                 | 8,0                 | 29                        | 36                                | 25                                | 22                                 | 54                                    | 52     | 51     | 47      | 40      | 38      | 52                       | 40                                 | 35     | 35     | 30      | 30      | 27      | 37                       | 39                                 | 34     | 33     | 29      | 21      | 23      | 35 |
|                  | 266                 | 10,0                | 45                        | 38                                | 26                                | 24                                 | 56                                    | 54     | 53     | 49      | 41      | 39      | 54                       | 42                                 | 37     | 37     | 32      | 31      | 28      | 39                       | 41                                 | 36     | 35     | 31      | 22      | 24      | 36 |
|                  | 319                 | 12,0                | 64                        | 39                                | 28                                | 26                                 | 58                                    | 55     | 54     | 50      | 42      | 40      | 55                       | 44                                 | 38     | 38     | 33      | 32      | 29      | 40                       | 43                                 | 37     | 36     | 32      | 23      | 25      | 38 |
| 125              | 63                  | 1,5                 | 1                         | 25                                | --                                | --                                 | 41                                    | 41     | 40     | 36      | 33      | 32      | 42                       | 26                                 | 24     | 23     | 19      | 21      | 20      | 27                       | 25                                 | 23     | 22     | 18      | -       | -       | 24 |
|                  | 168                 | 4,0                 | 7                         | 33                                | 21                                | --                                 | 52                                    | 49     | 48     | 43      | 38      | 36      | 49                       | 37                                 | 32     | 31     | 26      | 26      | 24      | 33                       | 36                                 | 31     | 30     | 25      | 19      | 21      | 31 |
|                  | 253                 | 6,0                 | 15                        | 36                                | 24                                | 23                                 | 57                                    | 52     | 51     | 46      | 40      | 38      | 52                       | 42                                 | 35     | 34     | 29      | 28      | 26      | 36                       | 41                                 | 34     | 33     | 28      | 21      | 23      | 34 |
|                  | 337                 | 8,0                 | 26                        | 38                                | 26                                | 24                                 | 56                                    | 54     | 53     | 49      | 41      | 40      | 54                       | 41                                 | 37     | 36     | 32      | 29      | 28      | 38                       | 40                                 | 36     | 35     | 31      | 22      | 25      | 36 |
|                  | 421                 | 10,0                | 41                        | 40                                | 27                                | 26                                 | 59                                    | 56     | 55     | 50      | 42      | 41      | 56                       | 44                                 | 39     | 38     | 33      | 30      | 29      | 40                       | 43                                 | 38     | 37     | 32      | 23      | 26      | 38 |
|                  | 505                 | 12,0                | 59                        | 41                                | 29                                | 27                                 | 61                                    | 57     | 56     | 52      | 43      | 42      | 57                       | 46                                 | 40     | 39     | 35      | 31      | 30      | 41                       | 45                                 | 39     | 38     | 34      | 24      | 27      | 39 |
| 160              | 105                 | 1,5                 | 1                         | 27                                | --                                | --                                 | 41                                    | 43     | 42     | 37      | 35      | 34      | 44                       | 24                                 | 26     | 24     | 19      | 19      | 20      | 27                       | 21                                 | 25     | 24     | 19      | -       | 18      | 26 |
|                  | 279                 | 4,0                 | 6                         | 34                                | 21                                | 20                                 | 51                                    | 51     | 49     | 45      | 40      | 39      | 51                       | 34                                 | 34     | 31     | 27      | 24      | 25      | 34                       | 31                                 | 33     | 31     | 27      | 20      | 23      | 33 |
|                  | 418                 | 6,0                 | 13                        | 37                                | 24                                | 23                                 | 56                                    | 54     | 52     | 48      | 42      | 41      | 54                       | 39                                 | 37     | 34     | 30      | 26      | 27      | 36                       | 36                                 | 36     | 34     | 30      | 22      | 25      | 35 |
|                  | 558                 | 8,0                 | 24                        | 39                                | 26                                | 25                                 | 60                                    | 56     | 54     | 50      | 44      | 42      | 56                       | 43                                 | 39     | 36     | 32      | 28      | 28      | 38                       | 40                                 | 38     | 36     | 32      | 24      | 26      | 38 |
|                  | 697                 | 10,0                | 37                        | 41                                | 28                                | 27                                 | 63                                    | 58     | 56     | 52      | 45      | 43      | 57                       | 46                                 | 41     | 38     | 34      | 29      | 29      | 40                       | 43                                 | 40     | 38     | 34      | 25      | 27      | 39 |
|                  | 836                 | 12,0                | 53                        | 41                                | 29                                | 29                                 | 63                                    | 60     | 58     | 53      | 46      | 44      | 59                       | 46                                 | 43     | 40     | 35      | 30      | 30      | 41                       | 43                                 | 42     | 40     | 35      | 26      | 28      | 41 |
| 200              | 165                 | 1,5                 | 1                         | 29                                | --                                | --                                 | 43                                    | 46     | 44     | 40      | 38      | 37      | 46                       | 25                                 | 28     | 24     | 20      | 20      | 21      | 28                       | 22                                 | 25     | 23     | 18      | 18      | 22      | 27 |
|                  | 439                 | 4,0                 | 6                         | 37                                | 22                                | 20                                 | 54                                    | 54     | 52     | 48      | 43      | 41      | 53                       | 36                                 | 36     | 32     | 28      | 25      | 25      | 34                       | 33                                 | 33     | 31     | 26      | 23      | 26      | 33 |
|                  | 658                 | 6,0                 | 12                        | 39                                | 25                                | 23                                 | 58                                    | 57     | 55     | 51      | 45      | 43      | 56                       | 40                                 | 39     | 35     | 31      | 27      | 27      | 37                       | 37                                 | 36     | 34     | 29      | 25      | 28      | 36 |
|                  | 878                 | 8,0                 | 22                        | 40                                | 28                                | 26                                 | 61                                    | 60     | 57     | 53      | 46      | 45      | 58                       | 43                                 | 42     | 37     | 33      | 28      | 29      | 39                       | 40                                 | 39     | 36     | 31      | 26      | 30      | 38 |
|                  | 1097                | 10,0                | 35                        | 41                                | 29                                | 27                                 | 61                                    | 62     | 59     | 55      | 48      | 46      | 60                       | 43                                 | 44     | 39     | 35      | 30      | 30      | 41                       | 40                                 | 41     | 38     | 33      | 28      | 31      | 39 |
|                  | 1317                | 12,0                | 50                        | 41                                | 31                                | 29                                 | 64                                    | 63     | 60     | 56      | 48      | 47      | 61                       | 46                                 | 45     | 40     | 36      | 30      | 31      | 42                       | 43                                 | 42     | 39     | 34      | 28      | 32      | 41 |
| 250              | 259                 | 1,5                 | 1                         | 30                                | --                                | --                                 | 44                                    | 47     | 46     | 41      | 39      | 39      | 48                       | 28                                 | 31     | 29     | 25      | 25      | 27      | 33                       | 25                                 | 28     | 26     | 23      | 20      | 25      | 30 |
|                  | 690                 | 4,0                 | 6                         | 37                                | 26                                | 23                                 | 55                                    | 55     | 53     | 49      | 44      | 43      | 55                       | 39                                 | 39     | 36     | 33      | 30      | 31      | 39                       | 36                                 | 36     | 33     | 31      | 25      | 29      | 36 |
|                  | 1035                | 6,0                 | 13                        | 38                                | 29                                | 26                                 | 59                                    | 58     | 56     | 52      | 46      | 45      | 58                       | 43                                 | 42     | 39     | 36      | 32      | 33      | 42                       | 40                                 | 39     | 36     | 34      | 27      | 31      | 39 |
|                  | 1380                | 8,0                 | 23                        | 39                                | 32                                | 29                                 | 62                                    | 60     | 59     | 54      | 48      | 47      | 60                       | 46                                 | 44     | 42     | 38      | 34      | 35      | 44                       | 43                                 | 41     | 39     | 36      | 29      | 33      | 41 |
|                  | 1725                | 10,0                | 35                        | 40                                | 33                                | 30                                 | 65                                    | 62     | 60     | 56      | 49      | 48      | 61                       | 49                                 | 46     | 43     | 40      | 35      | 36      | 46                       | 46                                 | 43     | 40     | 38      | 30      | 34      | 43 |
|                  | 2070                | 12,0                | 51                        | 41                                | 35                                | 32                                 | 67                                    | 64     | 62     | 57      | 50      | 49      | 63                       | 51                                 | 48     | 45     | 41      | 36      | 37      | 47                       | 48                                 | 45     | 42     | 39      | 31      | 35      | 44 |
| 315              | 413                 | 1,5                 | 1                         | 32                                | 22                                | --                                 | 46                                    | 48     | 47     | 42      | 41      | 41      | 49                       | 31                                 | 32     | 31     | 27      | 28      | 30      | 35                       | 28                                 | 28     | 27     | 24      | 23      | 27      | 32 |
|                  | 1101                | 4,0                 | 5                         | 36                                | 29                                | 25                                 | 56                                    | 56     | 55     | 50      | 46      | 45      | 56                       | 41                                 | 40     | 39     | 35      | 33      | 34      | 42                       | 38                                 | 36     | 35     | 32      | 28      | 31      | 38 |
|                  | 1651                | 6,0                 | 12                        | 38                                | 32                                | 28                                 | 61                                    | 59     | 58     | 53      | 48      | 47      | 59                       | 46                                 | 43     | 42     | 38      | 35      | 36      | 44                       | 43                                 | 39     | 38     | 35      | 30      | 33      | 41 |
|                  | 2202                | 8,0                 | 21                        | 38                                | 34                                | 30                                 | 60                                    | 62     | 60     | 55      | 50      | 49      | 61                       | 45                                 | 46     | 44     | 40      | 37      | 38      | 46                       | 42                                 | 42     | 40     | 37      | 32      | 35      | 43 |
|                  | 2752                | 10,0                | 32                        | 39                                | 35                                | 32                                 | 63                                    | 64     | 62     | 57      | 51      | 50      | 63                       | 48                                 | 48     | 46     | 42      | 38      | 39      | 48                       | 45                                 | 44     | 42     | 39      | 33      | 36      | 44 |
|                  | 3303                | 12,0                | 47                        | 40                                | 37                                | 33                                 | 66                                    | 65     | 63     | 59      | 52      | 51      | 64                       | 51                                 | 49     | 47     | 44      | 39      | 40      | 49                       | 48                                 | 45     | 43     | 41      | 34      | 37      | 46 |
| 355              | 525                 | 1,5                 | 1                         | 33                                | 24                                | 20                                 | 46                                    | 49     | 49     | 44      | 43      | 43      | 51                       | 32                                 | 33     | 33     | 28      | 31      | 33      | 38                       | 28                                 | 29     | 29     | 25      | 25      | 30      | 34 |
|                  | 1401                | 4,0                 | 5                         | 36                                | 31                                | 27                                 | 57                                    | 57     | 56     | 51      | 48      | 48      | 58                       | 43                                 | 41     | 40     | 36      | 36      | 38      | 44                       | 39                                 | 37     | 36     | 33      | 30      | 35      | 40 |
|                  | 2102                | 6,0                 | 11                        | 38                                | 33                                | 30                                 | 61                                    | 61     | 59     | 54      | 50      | 50      | 61                       | 47                                 | 45     | 43     | 39      | 38      | 40      | 47                       | 43                                 | 41     | 39     | 36      | 32      | 37      | 43 |
|                  | 2803                | 8,0                 | 20                        | 39                                | 36                                | 32                                 | 64                                    | 63     | 61     | 57      | 52      | 52      | 63                       | 50                                 | 47     | 45     | 42      | 40      | 42      | 49                       | 46                                 | 43     | 41     | 39      | 34      | 39      | 45 |
|                  | 3503                | 10,0                | 31                        | 40                                | 37                                | 33                                 | 67                                    | 65     | 63     | 58      | 53      | 53      | 64                       | 53                                 | 49     | 47     | 43      | 41      | 43      | 50                       | 49                                 | 45     | 43     | 40      | 35      | 40      | 46 |
|                  | 4204                | 12,0                | 45                        | 40                                | 38                                | 34                                 | 64                                    | 67     | 64     | 60      | 54      | 54      | 66                       | 50                                 | 51     | 48     | 45      | 42      | 44      | 51                       | 46                                 | 47     | 44     | 42      | 36      | 41      | 47 |
| 400              | 668                 | 1,5                 | 1                         | 33                                | 25                                | 21                                 | 47                                    | 51     | 50     | 45      | 44      | 44      | 52                       | 33                                 | 35     | 34     | 30      | 32      | 34      | 39                       | 29                                 | 31     | 30     | 27      | 26      | 31      | 35 |
|                  | 1783                | 4,0                 | 4                         | 36                                | 32                                | 28                                 | 58                                    | 59     | 57     | 52      | 49      | 48      | 59                       | 44                                 | 43     | 41     | 37      | 37      | 38      | 45                       | 40                                 | 39     | 37     | 34      | 31      | 35      | 41 |
|                  | 2674                | 6,0                 | 10                        | 38                                | 35                                | 31                                 | 62                                    | 62     | 60     | 56      | 52      | 51      | 62                       | 48                                 | 46     | 44     | 41      | 40      | 41      | 48                       | 44                                 | 42     | 40     | 38      | 34      | 38      | 44 |
|                  | 3565                | 8,0                 | 17                        | 39                                | 37                                | 33                                 | 65                                    | 64     | 63     | 58      | 53      | 52      | 64                       | 51                                 | 48     | 47     | 43      | 41      | 42      | 50                       | 47                                 | 44     | 43     | 40      | 35      | 39      | 46 |
|                  | 4456                | 10,0                | 27                        | 40                                | 38                                | 34                                 | 67                                    | 66     | 64     | 60      | 54      | 53      | 66                       | 53                                 | 50     | 48     | 45      | 42      | 43      | 51                       | 49                                 | 46     | 44     | 42      | 36      | 40      | 47 |
|                  | 5348                | 12,0                | 39                        | 40                                | 40                                | 36                                 | 69                                    | 68     | 66     | 61      | 55      | 54      | 67                       | 55                                 | 52     | 50     | 46      | 43      | 44      | 52                       | 51                                 | 48     | 46     | 43      | 37      | 41      | 49 |



| Model / Diameter | Lucht volume (m <sup>3</sup> /h) | Luchtsnelheid (m/s) | Min. P <sub>st</sub> (Pa) | Snelselectie<br>Lp(A) in dB(A)    |                                   |                                    | Luchtgeluid<br>enkel- en dubbelwandig |        |        |         |         |         |                          | Afgestraalgeluid<br>enkelwandig    |        |        |         |         |         |                          | Afgestraalgeluid<br>dubbelwandig   |        |        |         |         |         |                          |
|------------------|----------------------------------|---------------------|---------------------------|-----------------------------------|-----------------------------------|------------------------------------|---------------------------------------|--------|--------|---------|---------|---------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|--------------------------|------------------------------------|--------|--------|---------|---------|---------|--------------------------|
|                  |                                  |                     |                           | Luchtgeluid zonder<br>geluidemper | Afgestraald geluid<br>enkelwandig | Afgestraald geluid<br>dubbelwandig | Lw (dB/oct) re 10 <sup>-12</sup> W    |        |        |         |         |         | L <sub>w</sub> (A) dB(A) | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         | L <sub>w</sub> (A) dB(A) | Lw (dB/oct) re 10 <sup>-12</sup> W |        |        |         |         |         | L <sub>w</sub> (A) dB(A) |
|                  |                                  |                     |                           |                                   |                                   |                                    | 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 |                          |
| 100              | 40                               | 1,5                 | 1                         | 29                                | --                                | --                                 | 41                                    | 44     | 45     | 40      | 38      | 37      | 46                       | 27                                 | 27     | 29     | 23      | 28      | 26      | 33                       | 26                                 | 26     | 27     | 22      | 19      | 22      | 29                       |
|                  | 106                              | 4,0                 | 7                         | 36                                | 26                                | 23                                 | 51                                    | 52     | 52     | 47      | 43      | 42      | 53                       | 37                                 | 35     | 36     | 30      | 33      | 31      | 39                       | 36                                 | 34     | 34     | 29      | 24      | 27      | 35                       |
|                  | 160                              | 6,0                 | 16                        | 39                                | 28                                | 26                                 | 55                                    | 55     | 55     | 50      | 45      | 44      | 56                       | 41                                 | 38     | 39     | 33      | 35      | 33      | 41                       | 40                                 | 37     | 37     | 32      | 26      | 29      | 38                       |
|                  | 213                              | 8,0                 | 29                        | 41                                | 30                                | 28                                 | 58                                    | 58     | 57     | 53      | 46      | 45      | 58                       | 44                                 | 41     | 41     | 36      | 36      | 34      | 43                       | 43                                 | 40     | 39     | 35      | 27      | 30      | 40                       |
|                  | 266                              | 10,0                | 45                        | 43                                | 32                                | 30                                 | 60                                    | 59     | 59     | 54      | 47      | 46      | 60                       | 46                                 | 42     | 43     | 37      | 37      | 35      | 45                       | 45                                 | 41     | 41     | 36      | 28      | 31      | 42                       |
|                  | 319                              | 12,0                | 64                        | 45                                | 33                                | 31                                 | 62                                    | 61     | 60     | 56      | 48      | 47      | 61                       | 48                                 | 44     | 44     | 39      | 38      | 36      | 46                       | 47                                 | 43     | 42     | 38      | 29      | 32      | 43                       |
| 125              | 63                               | 1,5                 | 1                         | 31                                | 20                                | --                                 | 45                                    | 46     | 47     | 41      | 39      | 39      | 48                       | 30                                 | 29     | 30     | 24      | 27      | 27      | 33                       | 29                                 | 28     | 29     | 23      | 20      | 24      | 30                       |
|                  | 168                              | 4,0                 | 7                         | 38                                | 27                                | 25                                 | 56                                    | 54     | 54     | 49      | 44      | 44      | 55                       | 41                                 | 37     | 37     | 32      | 32      | 32      | 39                       | 40                                 | 36     | 36     | 31      | 25      | 29      | 37                       |
|                  | 253                              | 6,0                 | 15                        | 42                                | 30                                | 28                                 | 61                                    | 57     | 57     | 52      | 46      | 46      | 58                       | 46                                 | 40     | 40     | 35      | 34      | 34      | 42                       | 45                                 | 39     | 39     | 34      | 27      | 31      | 40                       |
|                  | 337                              | 8,0                 | 26                        | 43                                | 31                                | 30                                 | 60                                    | 60     | 59     | 54      | 48      | 47      | 60                       | 45                                 | 43     | 42     | 37      | 36      | 35      | 44                       | 44                                 | 42     | 41     | 36      | 29      | 32      | 42                       |
|                  | 421                              | 10,0                | 41                        | 45                                | 33                                | 31                                 | 63                                    | 61     | 61     | 56      | 49      | 48      | 61                       | 48                                 | 44     | 44     | 39      | 37      | 36      | 45                       | 47                                 | 43     | 43     | 38      | 30      | 33      | 44                       |
|                  | 505                              | 12,0                | 59                        | 46                                | 34                                | 33                                 | 65                                    | 63     | 62     | 57      | 50      | 49      | 63                       | 50                                 | 46     | 45     | 40      | 38      | 37      | 47                       | 49                                 | 45     | 44     | 39      | 31      | 34      | 45                       |
| 160              | 105                              | 1,5                 | 1                         | 32                                | 20                                | --                                 | 45                                    | 48     | 48     | 43      | 42      | 42      | 50                       | 28                                 | 31     | 30     | 25      | 26      | 27      | 33                       | 25                                 | 30     | 30     | 25      | 22      | 25      | 32                       |
|                  | 279                              | 4,0                 | 6                         | 40                                | 27                                | 26                                 | 55                                    | 56     | 55     | 50      | 47      | 46      | 57                       | 38                                 | 39     | 37     | 32      | 31      | 32      | 40                       | 35                                 | 38     | 37     | 32      | 27      | 30      | 39                       |
|                  | 418                              | 6,0                 | 13                        | 43                                | 30                                | 29                                 | 60                                    | 59     | 58     | 53      | 49      | 48      | 59                       | 43                                 | 42     | 40     | 35      | 33      | 34      | 42                       | 40                                 | 41     | 40     | 35      | 29      | 32      | 41                       |
|                  | 558                              | 8,0                 | 24                        | 45                                | 32                                | 31                                 | 64                                    | 62     | 61     | 56      | 50      | 50      | 62                       | 47                                 | 45     | 43     | 38      | 34      | 36      | 44                       | 44                                 | 44     | 43     | 38      | 30      | 34      | 44                       |
|                  | 697                              | 10,0                | 37                        | 46                                | 34                                | 33                                 | 67                                    | 64     | 62     | 57      | 51      | 51      | 63                       | 50                                 | 47     | 44     | 39      | 35      | 37      | 46                       | 47                                 | 46     | 44     | 39      | 31      | 35      | 45                       |
|                  | 836                              | 12,0                | 53                        | 46                                | 35                                | 34                                 | 67                                    | 65     | 64     | 59      | 52      | 52      | 65                       | 50                                 | 48     | 46     | 41      | 36      | 38      | 47                       | 47                                 | 47     | 46     | 41      | 32      | 36      | 46                       |
| 200              | 165                              | 1,5                 | 1                         | 35                                | 21                                | 20                                 | 47                                    | 52     | 51     | 46      | 44      | 44      | 53                       | 29                                 | 34     | 31     | 26      | 26      | 28      | 34                       | 26                                 | 31     | 30     | 24      | 24      | 29      | 33                       |
|                  | 439                              | 4,0                 | 6                         | 43                                | 28                                | 26                                 | 58                                    | 60     | 58     | 53      | 49      | 49      | 59                       | 40                                 | 42     | 38     | 33      | 31      | 33      | 41                       | 37                                 | 39     | 37     | 31      | 29      | 34      | 40                       |
|                  | 658                              | 6,0                 | 12                        | 45                                | 31                                | 29                                 | 62                                    | 63     | 61     | 56      | 51      | 51      | 62                       | 44                                 | 45     | 41     | 36      | 33      | 35      | 43                       | 41                                 | 42     | 40     | 34      | 31      | 36      | 42                       |
|                  | 878                              | 8,0                 | 22                        | 46                                | 33                                | 31                                 | 65                                    | 65     | 63     | 59      | 53      | 52      | 64                       | 47                                 | 47     | 43     | 39      | 35      | 36      | 45                       | 44                                 | 44     | 42     | 37      | 33      | 37      | 44                       |
|                  | 1097                             | 10,0                | 35                        | 46                                | 35                                | 33                                 | 65                                    | 67     | 65     | 60      | 54      | 53      | 66                       | 47                                 | 49     | 45     | 40      | 36      | 37      | 47                       | 44                                 | 46     | 44     | 38      | 34      | 38      | 46                       |
|                  | 1317                             | 12,0                | 50                        | 47                                | 36                                | 34                                 | 68                                    | 69     | 66     | 62      | 55      | 54      | 67                       | 50                                 | 51     | 46     | 42      | 37      | 38      | 48                       | 47                                 | 48     | 45     | 40      | 35      | 39      | 47                       |
| 250              | 259                              | 1,5                 | 1                         | 36                                | 25                                | 22                                 | 48                                    | 52     | 52     | 47      | 46      | 46      | 54                       | 32                                 | 36     | 35     | 31      | 32      | 34      | 39                       | 29                                 | 33     | 32     | 29      | 27      | 32      | 36                       |
|                  | 690                              | 4,0                 | 6                         | 42                                | 32                                | 29                                 | 59                                    | 60     | 60     | 54      | 51      | 51      | 61                       | 43                                 | 44     | 43     | 38      | 37      | 39      | 46                       | 40                                 | 41     | 40     | 36      | 32      | 37      | 43                       |
|                  | 1035                             | 6,0                 | 13                        | 44                                | 35                                | 32                                 | 63                                    | 64     | 63     | 57      | 53      | 53      | 64                       | 47                                 | 48     | 46     | 41      | 39      | 41      | 48                       | 44                                 | 45     | 43     | 39      | 34      | 39      | 45                       |
|                  | 1380                             | 8,0                 | 23                        | 45                                | 37                                | 35                                 | 66                                    | 66     | 65     | 60      | 54      | 54      | 66                       | 50                                 | 50     | 48     | 44      | 40      | 42      | 50                       | 47                                 | 47     | 45     | 42      | 35      | 40      | 47                       |
|                  | 1725                             | 10,0                | 35                        | 46                                | 39                                | 36                                 | 69                                    | 68     | 67     | 61      | 56      | 55      | 67                       | 53                                 | 52     | 50     | 45      | 42      | 43      | 52                       | 50                                 | 49     | 47     | 43      | 37      | 41      | 49                       |
|                  | 2070                             | 12,0                | 51                        | 46                                | 41                                | 38                                 | 71                                    | 69     | 68     | 63      | 57      | 56      | 69                       | 55                                 | 53     | 51     | 47      | 43      | 44      | 53                       | 52                                 | 50     | 48     | 45      | 38      | 42      | 50                       |
| 315              | 413                              | 1,5                 | 1                         | 38                                | 28                                | 24                                 | 50                                    | 54     | 54     | 48      | 48      | 48      | 56                       | 35                                 | 38     | 38     | 33      | 35      | 37      | 42                       | 32                                 | 34     | 34     | 30      | 30      | 34      | 38                       |
|                  | 1101                             | 4,0                 | 5                         | 42                                | 35                                | 31                                 | 60                                    | 62     | 61     | 56      | 53      | 53      | 62                       | 45                                 | 46     | 45     | 41      | 40      | 42      | 48                       | 42                                 | 42     | 41     | 38      | 35      | 39      | 45                       |
|                  | 1651                             | 6,0                 | 12                        | 43                                | 38                                | 34                                 | 65                                    | 65     | 64     | 59      | 55      | 55      | 65                       | 50                                 | 49     | 48     | 44      | 42      | 44      | 51                       | 47                                 | 45     | 44     | 41      | 37      | 41      | 47                       |
|                  | 2202                             | 8,0                 | 21                        | 44                                | 40                                | 36                                 | 64                                    | 68     | 66     | 61      | 57      | 56      | 67                       | 49                                 | 52     | 50     | 46      | 44      | 45      | 53                       | 46                                 | 48     | 46     | 43      | 39      | 42      | 49                       |
|                  | 2752                             | 10,0                | 32                        | 45                                | 41                                | 38                                 | 67                                    | 69     | 68     | 63      | 58      | 58      | 69                       | 52                                 | 53     | 52     | 48      | 45      | 47      | 54                       | 49                                 | 49     | 48     | 45      | 40      | 44      | 51                       |
|                  | 3303                             | 12,0                | 47                        | 46                                | 43                                | 39                                 | 70                                    | 71     | 70     | 64      | 59      | 58      | 70                       | 55                                 | 55     | 54     | 49      | 46      | 47      | 56                       | 52                                 | 51     | 50     | 46      | 41      | 44      | 52                       |
| 355              | 525                              | 1,5                 | 1                         | 39                                | 30                                | 26                                 | 51                                    | 55     | 55     | 49      | 50      | 51      | 57                       | 37                                 | 39     | 39     | 34      | 38      | 41      | 45                       | 33                                 | 35     | 35     | 31      | 32      | 38      | 41                       |
|                  | 1401                             | 4,0                 | 5                         | 42                                | 37                                | 33                                 | 61                                    | 63     | 62     | 57      | 55      | 56      | 64                       | 47                                 | 47     | 46     | 42      | 43      | 46      | 51                       | 43                                 | 43     | 42     | 39      | 37      | 43      | 47                       |
|                  | 2102                             | 6,0                 | 11                        | 44                                | 40                                | 36                                 | 65                                    | 67     | 66     | 60      | 57      | 58      | 67                       | 51                                 | 51     | 50     | 45      | 45      | 48      | 53                       | 47                                 | 47     | 46     | 42      | 39      | 45      | 49                       |
|                  | 2803                             | 8,0                 | 20                        | 45                                | 42                                | 38                                 | 68                                    | 69     | 68     | 62      | 58      | 59      | 69                       | 54                                 | 53     | 52     | 47      | 46      | 49      | 55                       | 50                                 | 49     | 48     | 44      | 40      | 46      | 51                       |
|                  | 3503                             | 10,0                | 31                        | 45                                | 43                                | 39                                 | 71                                    | 71     | 69     | 64      | 60      | 60      | 71                       | 57                                 | 55     | 53     | 49      | 48      | 50      | 57                       | 53                                 | 51     | 49     | 46      | 42      | 47      | 53                       |
|                  | 4204                             | 12,0                | 45                        | 46                                | 44                                | 41                                 | 68                                    | 72     | 71     | 65      | 61      | 61      | 72                       | 54                                 | 56     | 55     | 50      | 49      | 51      | 58                       | 50                                 | 52     | 51     | 47      | 43      | 48      | 54                       |
| 400              | 668                              | 1,5                 | 1                         | 39                                | 31                                | 27                                 | 51                                    | 56     | 56     | 50      | 51      | 51      | 58                       | 37                                 | 40     | 40     | 35      | 39      | 41      | 46                       | 33                                 | 36     | 36     | 32      | 33      | 38      | 42                       |
|                  | 1783                             | 4,0                 | 4                         | 42                                | 38                                | 34                                 | 62                                    | 64     | 64     | 58      | 56      | 56      | 65                       | 48                                 | 48     | 48     | 43      | 44      | 46      | 52                       | 44                                 | 44     | 44     | 40      | 38      | 43      | 48                       |
|                  | 2674                             | 6,0                 | 10                        | 44                                | 41                                | 37                                 | 66                                    | 68     | 67     | 61      | 58      | 58      | 68                       | 52                                 | 52     | 51     | 46      | 46      | 48      | 54                       | 48                                 | 48     | 47     | 43      | 40      | 45      | 50                       |
|                  | 3565                             | 8,0                 | 17                        | 45                                | 43                                | 39                                 | 69                                    | 70     | 69     | 64      | 60      | 60      | 70                       | 55                                 | 54     | 53     | 49      | 48      | 50      | 56                       | 51                                 | 50     | 49     | 46      | 42      | 47      | 52                       |
|                  | 4456                             | 10,0                | 27                        | 46                                | 44                                | 41                                 | 72                                    | 72     | 71     | 65      | 61      | 61      | 72                       | 58                                 | 56     | 55     | 50      | 49      | 51      | 58                       | 54                                 | 52     | 51     | 47      | 43      | 48      | 54                       |
|                  | 5348                             | 12,0                | 39                        | 46                                | 46                                | 42                                 | 73                                    | 74     | 72     | 67      | 62      | 62      | 73                       | 59                                 | 58     | 56     | 52      | 50      | 52      | 59                       | 55                                 | 54     | 52     | 49      | 44      | 49      | 55                       |



### Type:

- VSR - VAV unit met ronde in- en uitlaat

### Constructie:

- SW - Ronde behuizing enkelwandig, toevoer en retour.
- DW - Ronde behuizing dubbelwandig, toevoer en retour.
- SAS - Dubbelwandig (50mm) met geïntegreerde geluiddemper, toevoer
- SAR - Dubbelwandig (50mm) met geïntegreerde geluiddemper, retour

### Model:

- Ø - 100, 125, 160, 200, 250, 315 en 400

### Regeling:

- BE1 - Belimo LMV-D3-MP
- BEM - Belimo LMV-D3-MOD

### **Besteksomschrijving:**

#### *Voorbeeld:*

Leveren en monteren ronde dubbelwandige VAV unit vervaardigd uit gegalvaniseerd plaatstaal, met 50mm isolatie. Luchtdichtheid Luka klasse D. Klepblad sandwich constructie 1,5mm SBR plaatrubber tussen 2 gegalvaniseerd stalen klepbladen. Klepas ø12mm aluminium met 2 Nylon lagers. De unit is voorzien van een middelende en snelheidsdruk versterkende luchtsnelheidsensoren type FloXact®.

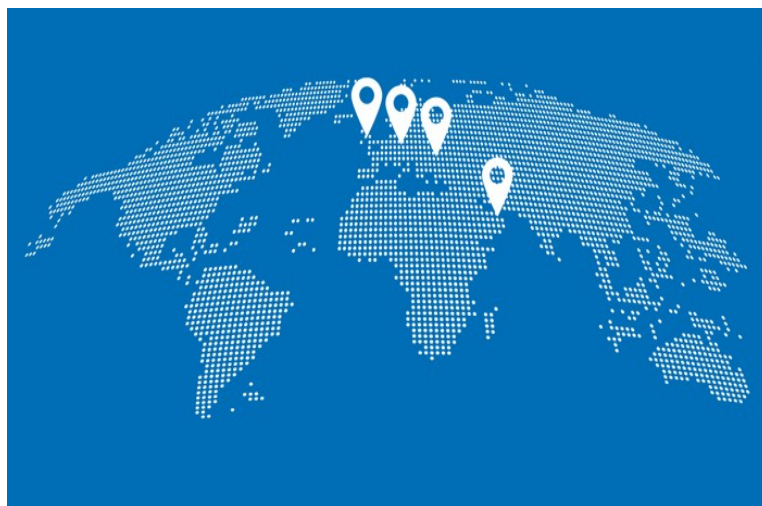
#### Voor:

|                        |                                                                |
|------------------------|----------------------------------------------------------------|
| Luchtvolume (Vmax)     | .... m <sup>3</sup> /h                                         |
| Unit afmeting (model)  | .... mm                                                        |
| Max. drukval           | .... Pa                                                        |
| Max. luchtgeluid       | .... dB(A)                                                     |
| Max. afgestraaldgeluid | .... dB(A)                                                     |
| Regelaar               | Belimo type LMV-D3-MP inclusief fabriekskalibratie en montage. |
| Fabriikaat             | AIR-CONCEPTS BV                                                |
| Type                   | VSR-SW-xxx-BE1                                                 |

### Air-Concepts locaties

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