



## TRANSFER AIR SOLUTIONS

Guide for selecting the  
right transfer air solution



**Swegon** 

# Quick selection

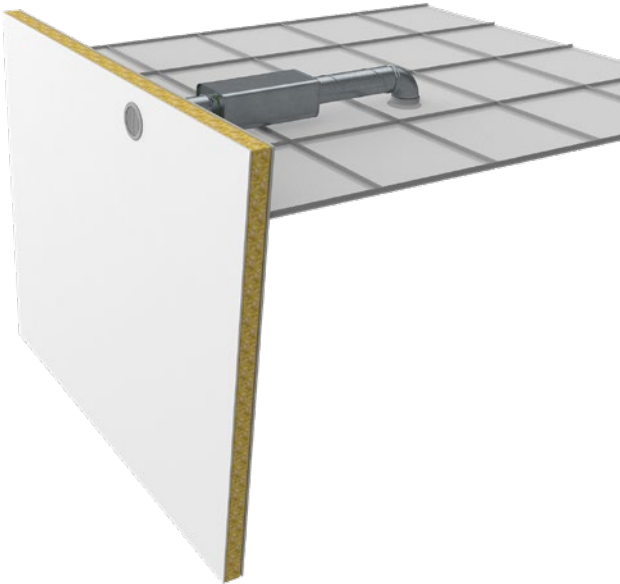
The table shows the  $R_w$  value with different combinations of transfer air, where Swegon's sound attenuators, air diffusers and duct components are included.

| AIR FLOW - PRESSURE DROP - $R_w$ VALUE |                                                    |                             |       |       |       |                                |                           |
|----------------------------------------|----------------------------------------------------|-----------------------------|-------|-------|-------|--------------------------------|---------------------------|
| Duct dimensions                        | Transfer diffusers comprising GRC and CLA          | Total pressure drop pt, l/s |       |       |       | $R_w = D_{n,ew} 1 \text{ m}^2$ | $D_{n,ew} 10 \text{ m}^2$ |
|                                        |                                                    | 5 Pa                        | 10 Pa | 15 Pa | 20 Pa | dB                             |                           |
| 100                                    | 2x GRC 100+ 1x CLA-A 100-500                       | 12                          | 15    | 18    | 20    | 36                             | 46                        |
| 100                                    | 2x GRC 100+ 1x CLA-A 100-1000                      | 12                          | 15    | 18    | 20    | 47                             | 57                        |
| 100                                    | 2x GRC 100+ 1x CLA-A 100-1000 + 1x CLA-A 100-500   | 11                          | 14    | 17    | 19    | 59                             | 69                        |
| 125                                    | 2x GRC 125+ 1x CLA-A 125-500                       | 19                          | 24    | 29    | 35    | 31                             | 41                        |
| 125                                    | 2x GRC 125 + 1x CLA-A 125-1000                     | 19                          | 24    | 29    | 35    | 44                             | 54                        |
| 125                                    | 2x GRC 125 + 1x CLA-A 125-1000 + 1x CLA-A 125-500  | 17                          | 22    | 27    | 32    | 56                             | 66                        |
| 125                                    | 2x GRC 125 + 2x CLA-A 125-1000                     | 17                          | 22    | 27    | 32    | 64                             | 74                        |
| 160                                    | 2x GRC 160 + 1x CLA-A 160-500                      | 31                          | 40    | 49    | 58    | 26                             | 36                        |
| 160                                    | 2x GRC 160 + 1x CLA-A 160-1000                     | 31                          | 40    | 49    | 58    | 39                             | 49                        |
| 160                                    | 2x GRC 160 + 2x CLA-A 160-500                      | 25                          | 35    | 45    | 55    | 42                             | 52                        |
| 160                                    | 2x GRC 160 + 1x CLA-A 160-1000 + 1x CLA-A 160-500  | 25                          | 35    | 45    | 55    | 52                             | 62                        |
| 160                                    | 2x GRC 160 + 2x CLA-A 160-1000                     | 25                          | 35    | 45    | 55    | 59                             | 69                        |
| 200                                    | 2x GRC 200 + 1x CLA-A 200-1000                     | 54                          | 70    | 85    | 100   | 36                             | 46                        |
| 200                                    | 2x GRC 200 + 1x CLA-A 200-1000 + 1x CLA-A 200-500  | 48                          | 65    | 80    | 95    | 47                             | 57                        |
| 200                                    | 2x GRC 200 + 2x CLA-A 200-1000                     | 48                          | 65    | 80    | 95    | 56                             | 66                        |
| 200                                    | 2x GRC 200 + 1x CLA-A 200-1000 + 2x CLA-A 200-500  | 45                          | 60    | 75    | 90    | 58                             | 68                        |
| 200                                    | 2x GRC 200 + 2x CLA-A 200-1000 + 1x CLA-A 200-500  | 45                          | 60    | 75    | 90    | 65                             | 75                        |
| 250                                    | 2x GRC 250 + 1x CLA-A 250-1000                     | 85                          | 115   | 140   | 165   | 28                             | 38                        |
| 250                                    | 2x GRC 250 + 1st CLA-A 250-1000 + 1x CLA-A 250-500 | 80                          | 110   | 133   | 155   | 38                             | 48                        |
| 250                                    | 2x GRC 250 + 2x CLA-A 250-1000                     | 80                          | 110   | 133   | 155   | 45                             | 55                        |
| 250                                    | 2x GRC 250 + 2x CLA-A 250-1000 + 1x CLA-A 250-500  | 75                          | 105   | 125   | 145   | 54                             | 64                        |
| 250                                    | 2x GRC 250 + 3x CLA-A 250-1000                     | 75                          | 105   | 125   | 145   | 60                             | 70                        |
| 315                                    | 2x GRC 315 + 1x CLA-A 315-1000                     | 140                         | 180   | 220   | 260   | 22                             | 32                        |
| 315                                    | 2x GRC 315 + 2x CLA-A 315-1000                     | 125                         | 175   | 210   | 245   | 37                             | 47                        |
|                                        | Transfer diffusers comprising GRC, CLA and ALS     |                             |       |       |       |                                |                           |
| 125                                    | 2x GRC 160+ALSd 125-160 + 1x CLA-A 125-1000        | 14                          | 18    | 22    | 25    | 45                             | 55                        |
| 160                                    | 2x GRC 200+ALSd 160-200 + 1x CLA-A 160-1000        | 23                          | 30    | 37    | 45    | 40                             | 50                        |
|                                        | Transfer diffusers comprising GRC, CLA and SOTTO   |                             |       |       |       |                                |                           |
| 125                                    | GRC 125 + 1x CLA-A 125-1000 + SOTTO 125            | 15                          | 25    | 31    | 36    | 56                             | 66                        |
| 160                                    | GRC 160 + 1x CLA-A 160-1000 + SOTTO 160            | 18                          | 30    | 36    | 42    | 51                             | 61                        |

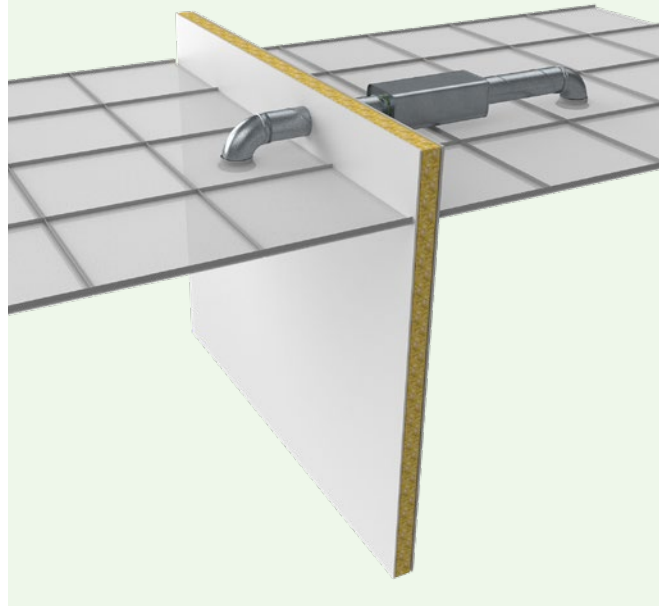
All the values in the table are calculated theoretically based on the relevant measured component.

# Installation examples

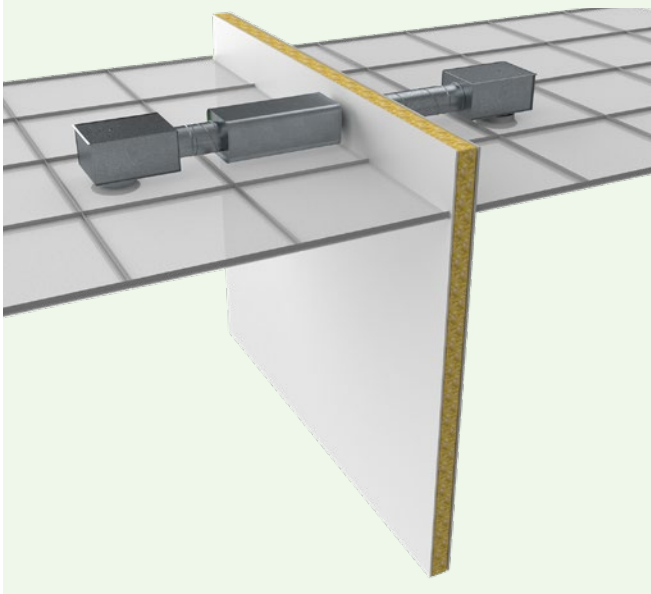
Transfer diffusers comprising GRC + CLA,  
Ceiling to wall



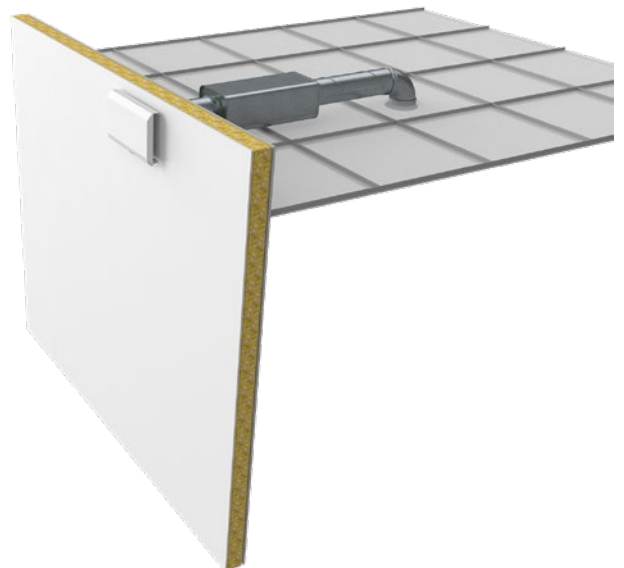
Transfer diffusers comprising GRC + CLA,  
Ceiling to ceiling



Transfer diffusers comprising GRC + ALS  
+ CLA, Ceiling to ceiling



Transfer diffusers comprising GRC + CLA +  
SOTTO



# Products

Transfer air solutions according to page 2 comprise the following products. Included in the MagiCAD database.

## ALS

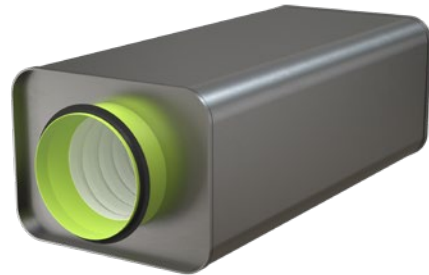


Commissioning box for air diffusers with removable commissioning damper, fixed measurement tapping and sound absorbing insulation.

- Made of galvanised sheet steel.
- Available with a change in dimension between the standard version inlet and outlet, as well as two changes in dimensions for square ceiling diffusers.
- Available in low version for square ceiling diffusers.
- Sound-absorbing material is fire resistance rated to B-s1,d0 in accordance with EN ISO 11925-2.

[Click here](#) to move to the product page at swegon.com with more information about ALS.

## CLA



Rectangular sound attenuator with circular connection. Unique properties regarding installation height, fire-resistance class, fibre-migration proof design and sound attenuation. Patent-pending self-supporting fibre-migration proof surface lining and end wall solution.

- Extremely low installation height.
- Very good sound attenuation.
- Fibre-migration proof.
- Air tightness class D.
- Low pressure drop.
- Fire-resistance class EI30 to EI120.

[Click here](#) to move to the product page at swegon.com with more information about CLA.

## GRC

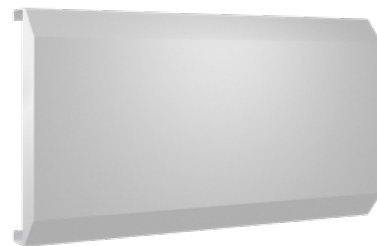


Circular egg crate grille for extract air and wall/ceiling mounting.

- Extract air.
- 91% free area.
- Manages large air flows.
- Cleanable.
- Can be used together with ALS commissioning box.
- Standard colour White RAL 9003.
  - 5 alternative standard colours.
  - Other colours upon request.

[Click here](#) to move to the product page at swegon.com with more information about GRC.

## SOTTO



Sound-attenuating transfer diffuser.

- Supplied individually.
- For the transfer of air through a wall.
- Fits in a circular cut opening.
- Simple to install.
- Accessories:
  - TRAC disc valve.
  - VGC telescopic wall sleeve.
- Two physical sizes: 380x170 mm for holes 80-100 mm, 380x220 mm for holes 125-160 mm.
- Standard colour White RAL 9003.
  - 5 alternative standard colours.
  - Other colours upon request.

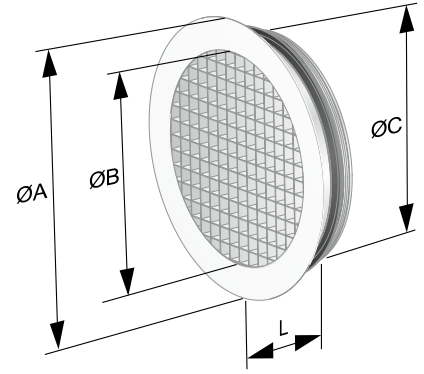
[Click here](#) to move to the product page at swegon.com with more information about SOTTO.

# Dimension tables

## GRC

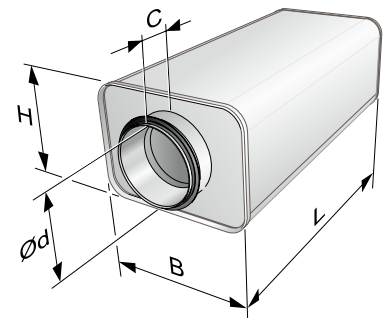
| Size | ØA  | ØB  | ØC  | L  | Weight, kg |
|------|-----|-----|-----|----|------------|
| 100  | 138 | 93  | 99  | 36 | 0.2        |
| 125  | 163 | 118 | 124 | 53 | 0.2        |
| 160  | 203 | 148 | 159 | 53 | 0.3        |
| 200  | 243 | 188 | 199 | 53 | 0.4        |
| 250  | 293 | 238 | 249 | 53 | 0.5        |
| 315  | 363 | 303 | 314 | 70 | 0.9        |
| 400  | 448 | 388 | 399 | 75 | 1.2        |
| 500  | 548 | 488 | 499 | 75 | 1.6        |
| 630  | 678 | 618 | 629 | 75 | 2.5        |

Size of the opening = ØC + 11 mm



## CLA

| Size | B   | C  | Ød  | H   | L   |      |
|------|-----|----|-----|-----|-----|------|
| 100  | 208 | 45 | 99  | 152 | 500 | 1000 |
| 125  | 236 | 45 | 124 | 177 | 500 | 1000 |
| 160  | 274 | 45 | 159 | 212 | 500 | 1000 |
| 200  | 321 | 45 | 199 | 252 | 500 | 1000 |
| 250  | 394 | 45 | 249 | 302 | 500 | 1000 |
| 315  | 462 | 45 | 314 | 367 | 500 | 1000 |
| 400  | 553 | 70 | 399 | 458 | 500 | 1000 |

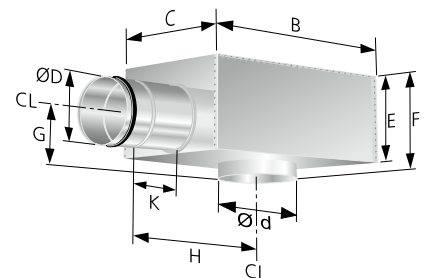


## ALS

| Size    | B   | C   | ØD  | Ød  | E*) | F   | G   | H   | K   | Weight, kg |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|
| 80-100  | 227 | 192 | 79  | 100 | 122 | 162 | 90  | 200 | 50  | 1.5        |
| 100-125 | 282 | 217 | 99  | 125 | 140 | 180 | 100 | 275 | 80  | 2.1        |
| 100-160 | 342 | 252 | 99  | 160 | 140 | 180 | 100 | 320 | 80  | 2.0        |
| 125-160 | 342 | 252 | 124 | 160 | 164 | 204 | 112 | 320 | 80  | 2.9        |
| 125-200 | 404 | 288 | 124 | 200 | 164 | 204 | 112 | 360 | 80  | 3.5        |
| 160-200 | 404 | 288 | 159 | 200 | 199 | 239 | 130 | 382 | 100 | 4.1        |
| 160-250 | 504 | 332 | 159 | 250 | 199 | 239 | 130 | 455 | 100 | 5.2        |
| 200-250 | 504 | 332 | 199 | 250 | 239 | 279 | 150 | 477 | 120 | 5.7        |
| 200-315 | 622 | 388 | 199 | 315 | 239 | 279 | 150 | 560 | 120 | 7.8        |
| 250-315 | 622 | 388 | 249 | 315 | 300 | 340 | 175 | 587 | 145 | 8.5        |
| 315-400 | 767 | 488 | 314 | 400 | -   | 400 | 212 | 722 | 188 | 11.8       |
| 400-500 | 887 | 588 | 399 | 500 | -   | 510 | 280 | 795 | 195 | 18.5       |

CL = Centre line

\*)E also refers to low installation height without sleeve.

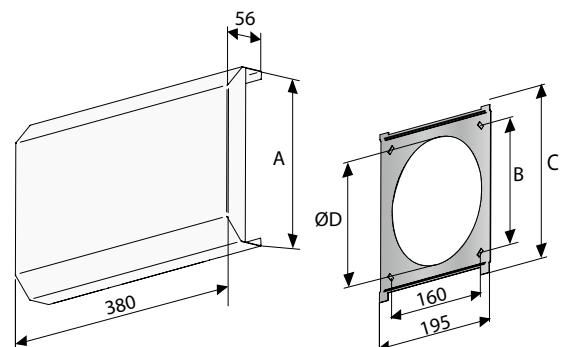


## SOTTO

| Size    | Dimensions (mm) |     |     |     |     | Weight, kg |
|---------|-----------------|-----|-----|-----|-----|------------|
|         | A               | B   | C   | ØD  | ØI  |            |
| 80-100  | 170             | 110 | 167 | 100 | 80  | 0.80       |
| 80-100  | 170             | 110 | 167 | 100 | 100 | 0.80       |
| 125-160 | 220             | 160 | 217 | 160 | 125 | 0,93       |
| 125-160 | 220             | 160 | 217 | 160 | 160 | 0,93       |

Size of the opening, SOTTO = ØI.

NOTE! Two physical sizes.



# Planning and design

When the transfer air kit is installed in the wall/ceiling, the wall's noise reduction index may be reduced. The quick selection table on page 2 indicates the possible reduction in the wall's total noise reduction index. Two calculation examples are provided below.

Typical example 1 is transfer air to a corridor, where extract air is drawn above the false ceiling. See Figure 1.

Typical example 2 is two transfer air kits, where extract air is drawn above the false ceiling. See Figure 2.

A transfer air kit must be selected so that it does not impair the sound insulating capacity of the wall structure.

To calculate the wall structure's resulting  $R_w$  index, examples 1 and 2 can be followed.

The quick selection table on page 2 presents the  $R_w$  value of the transfer diffuser with reference to 1 m<sup>2</sup> and 10 m<sup>2</sup> transmission area. To safeguard the balance and avoid positive/negative pressure in the premises, the transfer air solution should be dimensioned with max 20 Pa.

## Example 1:

In a wall with a surface area of 10 m<sup>2</sup> and  $R_w = 35$  dB, a transfer air kit is positioned with 2 x GRC 250 + 1 x CLA-A 250-1000.

$R_w$  transfer air kit = 27 dB. The difference between wall and transfer air kit is 8 dB (35-27). Go into the diagram with surface ratio 10 ( $S_1$  = reference area = 1 m<sup>2</sup>) and a difference of 8 dB. At the intersection between these, read off how much the wall's reduction index is reduced when a transfer air kit is installed (approx. 2 dB) (see diagram).

I.e. a difference of 8 dB gives a resulting reduction index for the wall in question (incl. transfer air kit) of 33 dB (35 - 2).

## Example 2:

In a wall with a surface area of 10 m<sup>2</sup> and  $R_w = 44$  dB, two transfer air kits are positioned with 2 x GRC 160 + 1 x CLA-A 160-1000 each.  $R_w$  transfer air kit = 39 dB.

The difference between wall and transfer air kit is 5 dB (44-39). Go into the diagram with surface ratio 10 ( $S_1$  = reference area = 1 m<sup>2</sup>) and a difference of 5 dB. At the intersection between these, read off how much the wall's reduction index is reduced when a transfer air kit is installed (1 dB).

I.e. with a transfer air kit in the wall, the wall is impaired by 1 dB. The wall's resulting  $R_w = 43$  dB (44-1).

To see how both transfer air kits act together, we will perform the same calculation again. The difference between wall and transfer air kit is now 4 dB (43-39). Read off from the diagram with surface ratio 10 ( $S_1$  = reference area = 1 m<sup>2</sup>) and a difference of 4 dB. This is approx. 1 dB and the wall's total resulting  $R_w = 42$  dB (43-1).

**Decrease in the wall's reduction index when one transfer air kit is installed in it.**

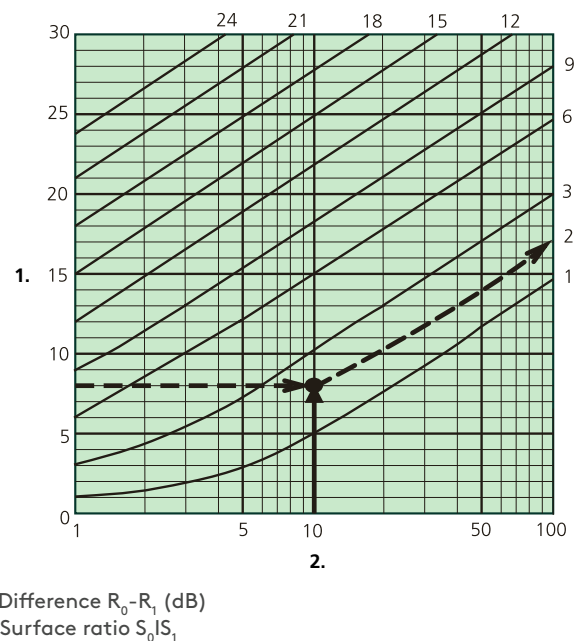


Figure 1.

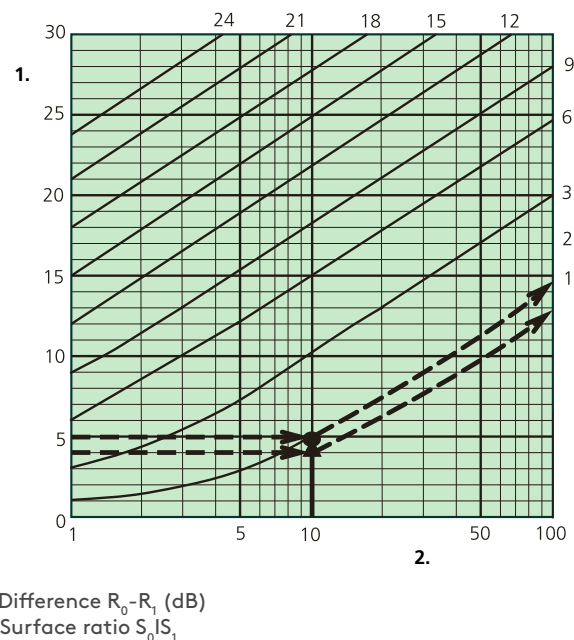


Figure 2.

# Extended project planning example

## To calculate the reduction index of the wall

To calculate the total reduction index of a wall including door and transfer diffuser

$D_{n,ew}$  = The  $R_w$  value of the transfer diffuser with reference to 10 m<sup>2</sup> transmission area.

$R_{wall}$  = The  $R_w$  value of the wall without door and transfer air diffuser, usually specified for 10 m<sup>2</sup>.

Calculate the difference between wall and door as well as transfer diffuser (transmission area 10 m<sup>2</sup>).

Difference:  $R_{wall} - D_{n,ew}$  is obtained from Table 3.

Note: First recalculate the door to 10 m<sup>2</sup>.

### Example: Door + Transfer diffuser

- Wall,  $R_w = 40$  dB, without door and transfer diffuser.
  - Transfer diffuser,  $R_w = D_{n,ew} = 40$  dB.
  - Door,  $R_w = 35$  dB for 2 m<sup>2</sup> provided from Table 2.
- $R_w = D_{n,ew} = 35 + 7 = 42$  dB for the door for 10 m<sup>2</sup>.

### Include the door in the calculation:

$$R_{wall} - D_{n,ew} = 40 - 42 = -2$$

Table 3 difference = -2 dB decreases total value of the wall by 2.

$$R_{wall} = 38 \text{ dB with door.}$$

### Include the transfer diffuser in the calculation:

$$R_{wall} = 38 \text{ dB}$$

$$R_{wall} - D_{n,ew} = 38 - 40 = -2$$

Table 3 difference = -2 dB decreases the new total value of the wall by another 2 dB.

Wall, total value = 36 dB with door + transfer diffuser.

### Change to another transmission area

The specified  $D_{n,ew}$  value of the transfer diffuser provides  $R_w$  for a normalised transmission area of 10 m<sup>2</sup>.

Recalculation to other transmission areas:

Table 2

| Area (m <sup>2</sup> ) | 10 | 2  | 1   |
|------------------------|----|----|-----|
| Correction (dB)        | 0  | -7 | -10 |

### Example: Other transmission area

Compare Swegon's transfer diffusers to a door that usually has a 2 m<sup>2</sup> transmission area.

Door  $R_w = 35$  dB for 2 m<sup>2</sup>

Transfer diffuser  $D_{n,ew}$  for 10 m<sup>2</sup> = 50 dB. Recalculate to 2 m<sup>2</sup> transmission area.

The table provides the following: Transfer diffuser  $R_w = D_{n,ew}$  for 2 m<sup>2</sup> = 50 - 7 = 43 dB

### Tip!

Size the transfer diffuser to be 5 dB better than the door, then the  $R_w$  value of the door will be the critical figure.

### Calculate using the formula:

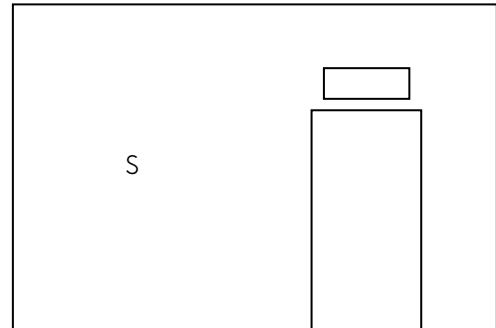
$$R_{tot} = 10 \times \log \left( \frac{S}{(10 \text{ m}^2 \times 10^{-0.1 \times D_{n,ew}}) + (S \times 10^{-0.1 \times R_{wall}})} \right)$$

$R_{tot}$  = The total reduction index for wall with transfer diffuser or door.

S = The wall area.

$D_{n,ew}$  = The  $D_{n,ew}$  value of the transfer diffuser =  $R_w$  for 10 m<sup>2</sup> transmission area.

$R_{wall}$  = The R value for the wall without air diffuser and door.



Transfer diffuser above door, S = wall area.

Table 3

| Difference: $R_{wall} - D_{n,ew}$ | Decrease $R_{wall}$ by: |
|-----------------------------------|-------------------------|
| -5                                | 1                       |
| -4                                | 1.5                     |
| -3                                | 2                       |
| -2                                | 2                       |
| -1                                | 2.5                     |
| 0                                 | 3                       |
| 1                                 | 3.5                     |
| 2                                 | 4                       |
| 3                                 | 5                       |
| 4                                 | 5                       |
| 5                                 | 6                       |
| 6                                 | 7                       |
| 8                                 | 9                       |
| 10                                | 10                      |

Feel good **inside**

