# CIRCO

## Sound-attenuating transfer unit

## QUICK FACTS

- For the transfer of air through a wall
- Fits in a circular cut opening
- Simple to install
- Mounting frame integrated into the transfer diffuser
- Accessories:
  - TRAC disc valve
  - VGC telescopic wall sleeve
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

| AIR FLOW - PRESSURE DROP - $R_w$ VALUE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CIRCO Size | Hole (mm) | 10 Pa | | 15 Pa | | 20 Pa | | $R_w=D_{n,ew}$ (dB) |
| | | l/s | m³/h | l/s | m³/h | l/s | m³/h | |
| 80-125 | 80 | 14 | 50 | 17 | 61 | 20 | 72 | 50 |
| 80-125 | 100 | 20 | 72 | 23 | 83 | 28 | 101 | 47 |
| 80-125 | 125 | 24 | 86 | 30 | 108 | 34 | 122 | 45 |
| 160 | 160 | 39 | 140 | 46 | 130 | 54 | 194 | 42 |

*The data applies to installation in a 100 mm thick studded wall with a 10 $m^2$ transmission area. One transfer diffuser on each side of the wall.*

Swegon

# Technical Description

## Design

Sound attenuating transfer unit designed for installation in studded walls, produced as circular baffles containing insulating sound-absorbing material covered by a reinforced surface layer, rated to Fire Resistance Class B-s1,d0 conforming to EN ISO 11925-2. The baffles have an integrated mounting frame with open slot all around.

## Materials and surface treatment

The baffles are made of sheet steel. The mounting frame is made of galvanised sheet steel. The baffles are painted.

- Standard colour:
  - White semi-gloss, lustre 40, RAL 9003/NCS S 0500-N
- Alternative standard colours
  - Silver gloss, lustre 80, RAL 9006
  - Grey aluminium gloss, lustre 80, RAL 9007
  - Blanc semi-brillant, lustre 40, RAL 9010
  - Black semi-gloss, lustre 35, RAL 9005
  - Grey semi-gloss, lustre 30, RAL 7037
- Non-painted finish and other colours available on request.

## Adaptation

Other colours are available on enquiry. Please contact your nearest sales office for information.

## Accessories

**Disc valve:**

TRAC. The disc valve is made of sheet steel and is painted in our standard white colour, RAL 9003/NCS S 0500-N. The disc valve is also available in alternative standard colours: RAL 7037 dusty grey, RAL 9006 white aluminium, RAL 9005 jet black, RAL 9007 grey aluminium and RAL 9010 white.

Used on one side of the wall when only one sound baffle is required.

**Wall sleeve:**

VGC. Circular telescopic wall sleeve made of galvanized sheet steel.

## Installation

Cut the opening according to table 1. The baffle's integrated mounting frame has key holes. Fasten screws above and below the cut opening and then hook the transfer unit to secure it against the screws, see Figure 1.

If a wall sleeve is used, it can be secured to the wall structure. Pull the wall sleeve apart or push it together to adjust it to the thickness of the relevant wall.

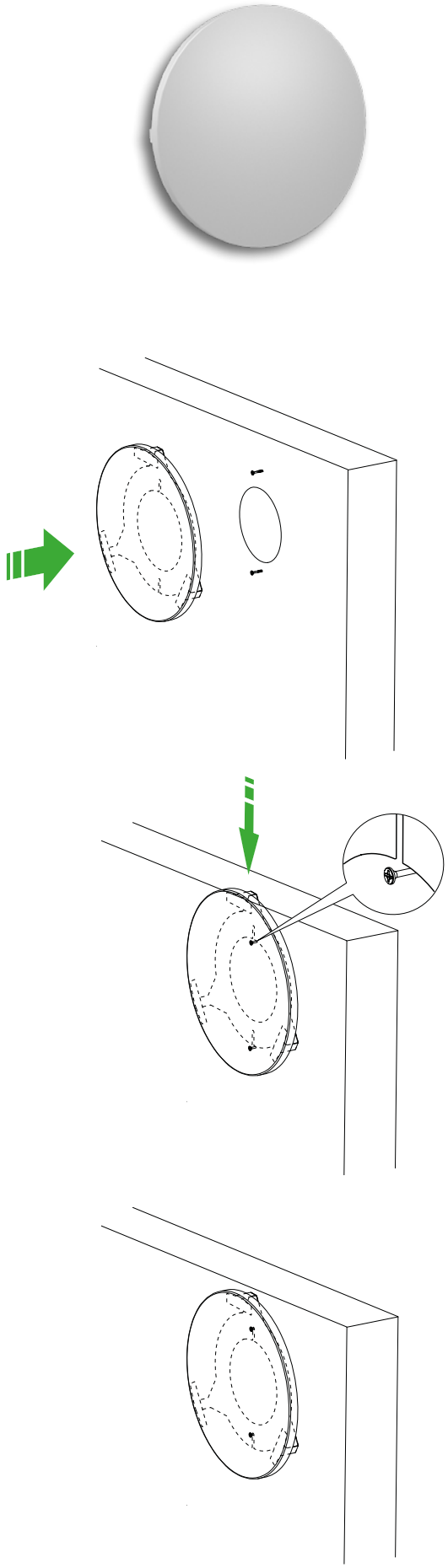


*Figure 1. Installation.*

## Project planning

- The diffuser is designed for installation in studded walls with plasterboard covering.
- Concrete wall, or wall sleeve decreases the reduction index, see Table 1.
- Rule of thumb: $R_w$ for transfer diffuser= Sound class Door + 5 dB (NOTE! door usually presented for 2 $m^2$ transmission area)
- Calculation of the wall structure's resulting $R_w$ value is shown in the example on the next page.
- Table 1 specifies reduction index $D_{n,ew}$ for transfer units, which refer to 10 $m^2$ transmission area.
- The measurements have been carried out according to ISO 9614-2 – Technical.
- The $R_w = D_{n,ew}$ value has been evaluated in relation to reference curve i ISO 717-1. The tests have been carried out in a 100 mm thick studded wall with insulation.

## Maintenance

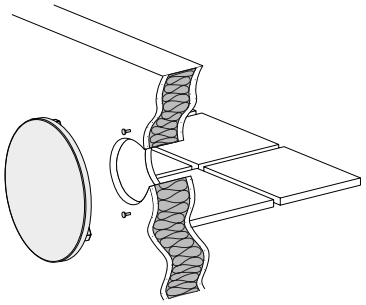
Clean the baffle and sound absorbing material, if necessary, using a vacuum cleaner with a brush nozzle or with lukewarm water and dishwashing detergent.

The whole sound absorbing material can be replaced if necessary.

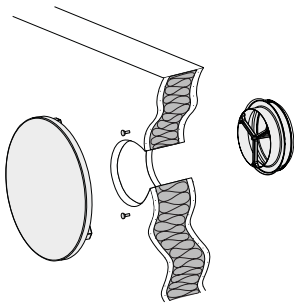
## Environment

The Building Materials Declaration is available from www.swegon.com.

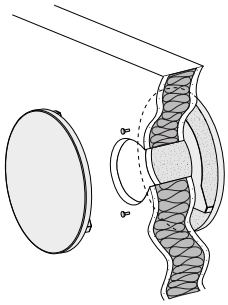
*1.*



*2a.*



*2b.*



*3.*

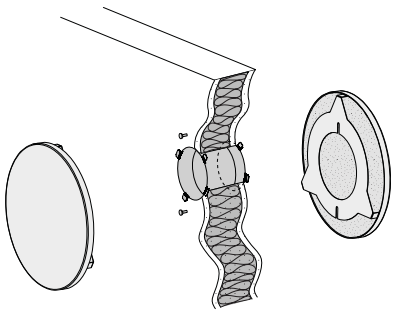


*Figure 2. Application options.*

1. *Concealed installation towards a corridor.*
2. *Visible installation towards a corridor. The CIRCO can be supplemented with a TRAC (2a) disc valve, or double CIRCO (2b).*
3. *As in (2), but with VGC wall sleeve.*

**Table 1**

| | | $R_w = D_{n,ew}$ [dB], 10 $m^2$ | | | | |
|---|---|---|---|---|---|---|
| Size CIRCO | Cut opening in wall (mm) | One transfer unit | One transfer unit + disc valve, s = 15 mm | Double transfer units | VGC in hole | Concrete wall |
| 80-125 | 80 | 50 | 49 | 50 | Decreases -6 dB | Decreases -10 dB |
| 80-125 | 100 | 46 | 47 | 47 | Decreases -6 dB | Decreases -10 dB |
| 80-125 | 125 | 42 | 45 | 45 | Decreases -6 dB | Decreases -10 dB |
| 160 | 160 | 40 | 42 | 42 | Decreases -6 dB | Decreases -10 dB |

Double transfer units = One unit on each side of the wall.
Standard delivery of double transfer units.
s = 15 mm slot on disc valve.

# Sizing

## To calculate the reduction index of the wall

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

$D_{n,ew}$ = The $R_w$ value of the transfer unit referred to 10 m transmission area$^2$.

$R_{wall}$= $R_w$ value of a wall without door and transfer unit, specified most often for 10 m$^2$.

Calculate the difference between wall and door as well as transfer unit (10 m tranmission area$^2$).

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

NOTE! First recalculate the door to 10 m$^2$.

### Example: Door + Transfer unit

- Wall, $R_w$ = 40 dB, without door and transfer unit.
- Transfer unit, $R_w$= $D_{n,ew}$= 40 dB.
- Door, $R_w$= 35 dB for 2 m$^2$ provides from Table 2

$R_w$=$D_{n,ew}$=35+7=42 dB for the door for 10 m$^2$.

### Include the door in the calculation:

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

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

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

### Include the transfer unit in the calculation:

$R_{wall}$ = 38 dB

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

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

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

### Change to another transmission area

The specified $D_{n,ew}$ value of the transfer unit provides $R_w$ for a normalised transmission area of 10 m$^2$.

Recalculation to other transmission areas:

**Table 2**

| Area (m$^2$) | 10 | 2 | 1 |
|---|---|---|---|
| Correction (dB) | 0 | -7 | -10 |

### Example: Other transmission area

Compare Swegon's transfer unit to a door which most often has a 2 m$^2$ transmission area.

Door $R_w$= 35 dB for 2 m$^2$

Transfer unit $D_{n,ew}$ for 10 m$^2$ = 50 dB
Recalculate to 2 m$^2$ transmission area.

The table provides the following: Transfer unit $R_w$=$D_{n,ew}$ for 2 m$^2$ = 50-7 = 43 dB

### Tip!

Size the transfer unit to be 5 dB better than the door since the $R_w$ value of the door will be the critical figure.

### Calculate using the formula:

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

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

S = The wall area.

$D_{n,ew}$ = The $D_{n,ew}$ value of the transfer unit = $R_w$ for 10 m$^2$ transmisson area.

$R_{wall}$ = The total R value for wall without transfer unit and door.

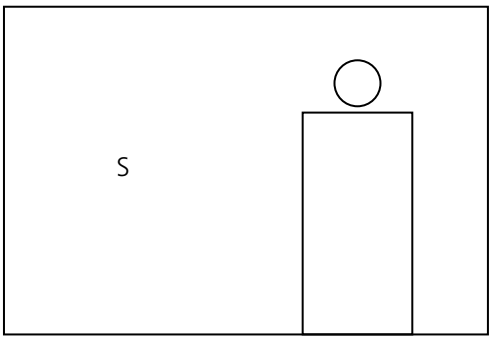



*Figure 3. Transfer unit above door, S = wall area.*

**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 |

## Acoustic data

- The specified sound levels dB(A) are applicable to a normally attenuated room with 10 $m^2$ equivalent sound absorption area and 4 dB room attenuation.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.

### CIRCO - One transfer unit

**Sound power level $L_w$ (dB)**
**Table $K_{OK}$**

| Size CIRCO | Cut opening in wall (mm) | Mid-frequency (octave band) Hz | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 80-125 | 80 | 15 | 12 | 5 | -1 | -1 | -9 | -21 | -26 |
| 80-125 | 100 | 14 | 12 | 8 | -2 | -2 | -9 | -21 | -27 |
| 80-125 | 125 | 12 | 9 | 10 | -1 | -3 | -9 | -22 | -27 |
| 160 | 160 | 17 | 11 | 8 | -2 | -1 | -9 | -21 | -28 |

### CIRCO - One transfer unit +

### disc valve, TRAC, s = 15 mm

**Sound power level $L_w$ (dB)**
**Table $K_{OK}$**

| Size CIRCO | Cut opening in wall (mm) | Mid-frequency (octave band) Hz | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 80-125 | 80 | 14 | 14 | 7 | 0 | -3 | -15 | -26 | -27 |
| 80-125 | 100 | 10 | 12 | 9 | -1 | -3 | -11 | -24 | -30 |
| 80-125 | 125 | 13 | 15 | 9 | -3 | -5 | -11 | -23 | -28 |
| 160 | 160 | 18 | 15 | 8 | -4 | -6 | -13 | -26 | -29 |

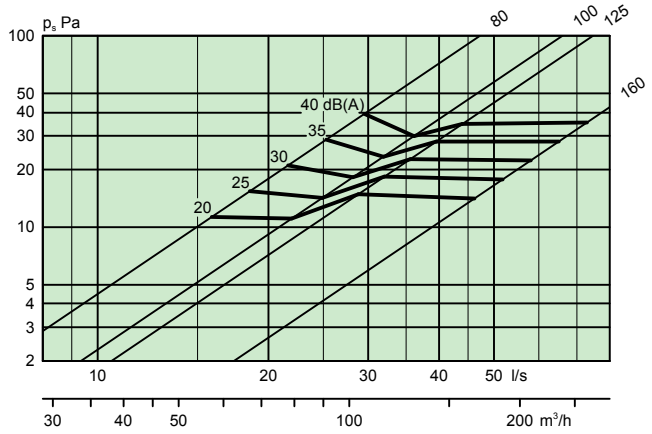
### CIRCO - Double transfer units

**Sound power level $L_w$ (dB)**
**Table $K_{OK}$**

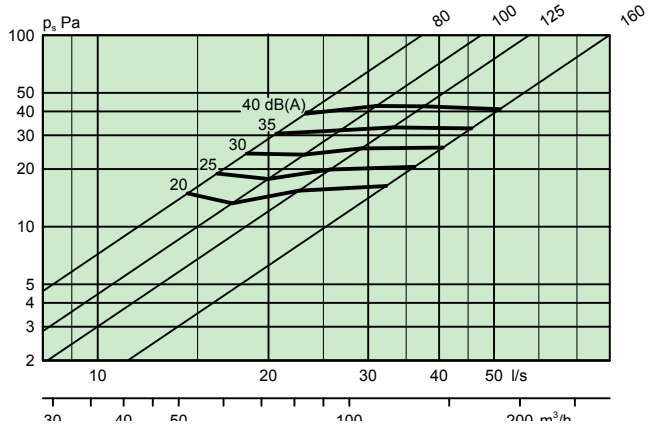
| Size CIRCO | Cut opening in wall (mm) | Mid-frequency (octave band) Hz | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 80-125 | 80 | 16 | 13 | 7 | -1 | -2 | -12 | -23 | -28 |
| 80-125 | 100 | 11 | 12 | 7 | -2 | -1 | -9 | -21 | -28 |
| 80-125 | 125 | 13 | 15 | 9 | -3 | -5 | -11 | -23 | -28 |
| 160 | 160 | 18 | 15 | 8 | -4 | -6 | -13 | -26 | -29 |

## Sizing diagram

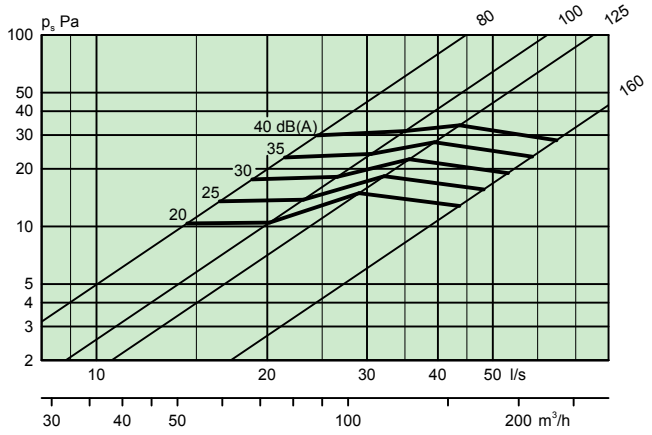
### CIRCO - One transfer unit




### CIRCO - One transfer unit + disc valve, TRAC, s = 15 mm




### CIRCO - Double transfer units



# Dimensions and weights

## CIRCO

| Size | Dimensions (mm) | | | Weight (kg)* |
|---|---|---|---|---|
| | B | ØD | ØI | |
| 80-125 | 160 | 228 | 80 | 1,06 |
| 80-125 | 160 | 228 | 100 | 1,06 |
| 80-125 | 160 | 228 | 125 | 1,06 |
| 160 | 200 | 304 | 160 | 1,86 |

Size of the opening, CIRCO = ØI.

*Weight refers to 2 units.

Two physical sizes.

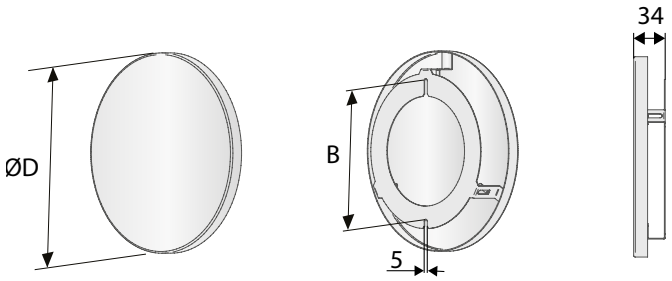



*Figure 4. CIRCO, dimensions.*

## VGC

| Size | Dimensions (mm) | | Weight (kg) |
|---|---|---|---|
| | C | ØD | |
| 80 | 80-160 | 80 | 0,22 |
| 100 | 80-160 | 100 | 0,30 |
| 125 | 80-160 | 125 | 0,33 |
| 160 | 80-160 | 160 | 0,42 |

Size of opening, VGC = ØD + 3 mm.

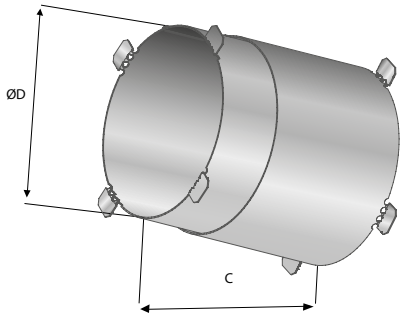



*Figure 5. VGC, dimensions.*

## TRAC

| Size | Dimensions (mm) | | | | | Weight (kg) |
|---|---|---|---|---|---|---|
| | ØA | Ød | ØD | $H_{max}$ | s | |
| 80 | 100 | 77 | 90 | 35 | 15±5 | 0,16 |
| 100 | 120 | 97 | 110 | 45 | 15±5 | 0,19 |
| 125 | 150 | 122 | 140 | 45 | 15±5 | 0,26 |
| 160 | 190 | 157 | 180 | 55 | 15±5 | 0,37 |

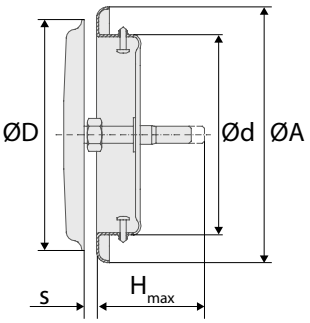



*Figure 6. TRAC, dimensions.*

# Ordering key

### Product

| | | | |
|---|---|---|---|
| Circular transfer unit | | CIRCO a | -bbb |
| Version: | | | |
| Size: 80-125, 160 | | | |
| Two physical sizes. | | | |

### Accessories

| | | | | | |
|---|---|---|---|---|---|
| Circular wall sleeve: | | | VGC | a | -bbb |
| Version: | | | | | |
| For CIRCO | 80-125:<br>160: | VGC | 80, 100 or 125<br>160 | | |

| | | | | | |
|---|---|---|---|---|---|
| Disc valve: | | | TRAC | a | -bbb |
| Version: | | | | | |
| For CIRCO | 80-125:<br>160: | TRAC | 80, 100 or 125<br>160 | | |

# Specification text

Swegon's type CIRCO circular sound attenuating transfer unit, with the following features:

- Acoustic insulation with reinforced surface layer.
- Powder-painted and baked white finish, RAL 9003/NCS S 0500-N.

| | | |
|---|---|---|
| Size: | CIRCOa - bbb | xx items |
| Accessories: | | |
| Telescopic wall sleeve: | VGCa - bbb | xx items |
| Disc valve: | TRACa - bbb | xx items |