

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
- Available in alternative colours

AIR FLOW - PRESSURE DROP - R_w VALUE								
CIRCO Size	Hole (mm)	10 Pa		15 Pa		20 Pa		$R_w = D_{reew}$ (dB)
		l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /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 stud wall with a 10 m² transmission area. One transfer diffuser on each side of the wall.

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 in our standard white colour: RAL 9003/NCS S 0500-N. The transfer unit is also available in optional standard colours: RAL 7037 dusty grey, RAL 9006 white aluminium, RAL 9005 jet black, RAL 9007 grey aluminium and RAL 9010 white.

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.

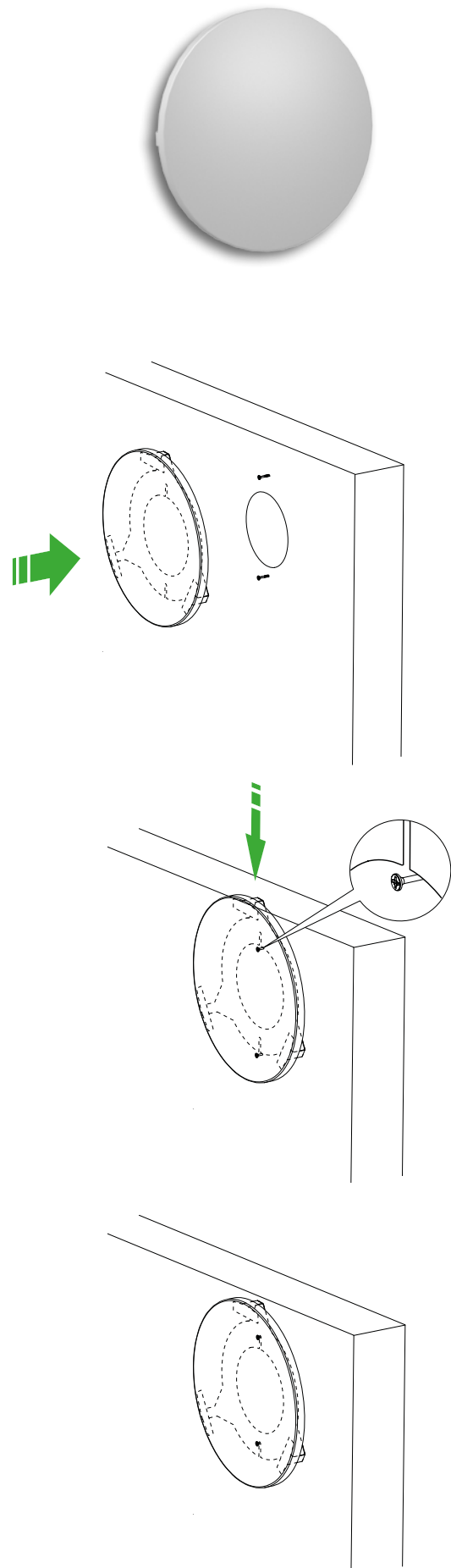


Figure 1. Installation.

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 m² 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 m² 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

The baffles can be cleaned, if necessary, using lukewarm water and dishwashing detergent.

Environment

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

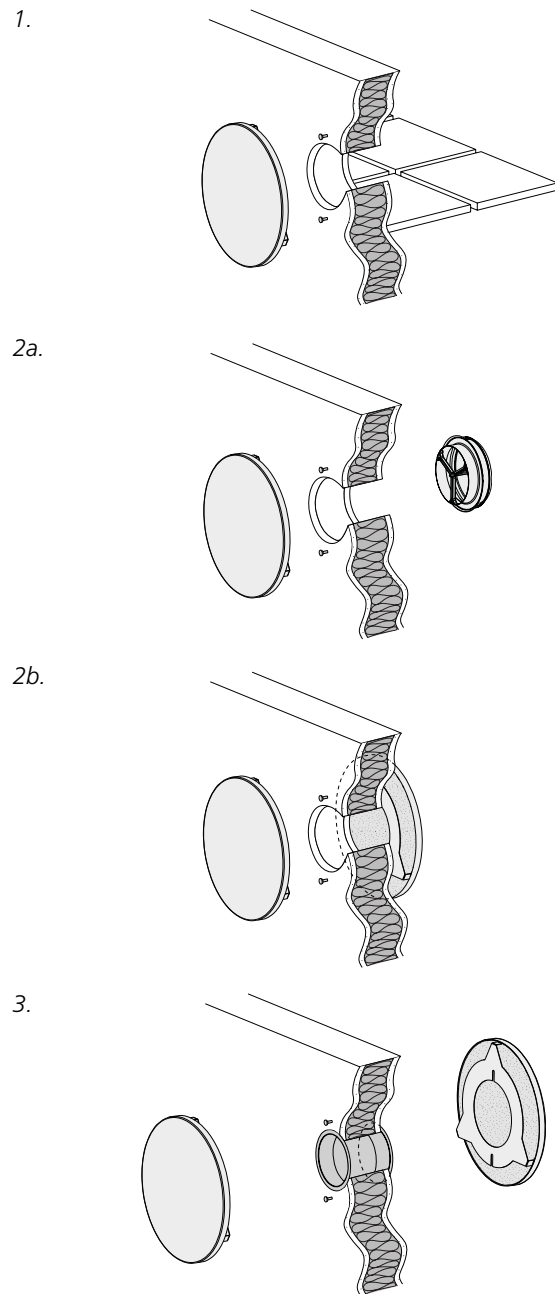


Figure 2. Application options.

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

Size CIRCO	Cut opening in wall (mm)	$R_w = D_{n,ew}$ [dB], 10 m ²				VGC in hole	Concrete wall
		One transfer unit	One transfer unit + disc valve, s = 15 mm	Double transfer units			
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 m² transmission area².

R_{wall} = R_w value of a wall without door and transfer unit, specified most often for 10 m².

Calculate the difference between wall and door as well as transfer unit (10 m transmission area²).

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

NOTE! First recalculate the door to 10 m².

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 m² provides from Table 2

$R_w = D_{n,ew} = 35 + 7 = 42$ dB for the door for 10 m².

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:

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

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

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 m².

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 m² transmission area.

Door $R_w = 35$ dB for 2 m²

Transfer unit $D_{n,ew}$ for 10 m² = 50 dB

Recalculate to 2 m² transmission area.

The table provides the following: Transfer unit $R_w = D_{n,ew}$ for 2 m² = 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 m² transmission area.

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

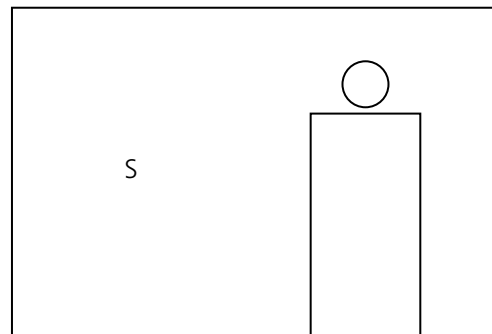


Figure 3. Transfer unit above door, S = wall area.

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 m² 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

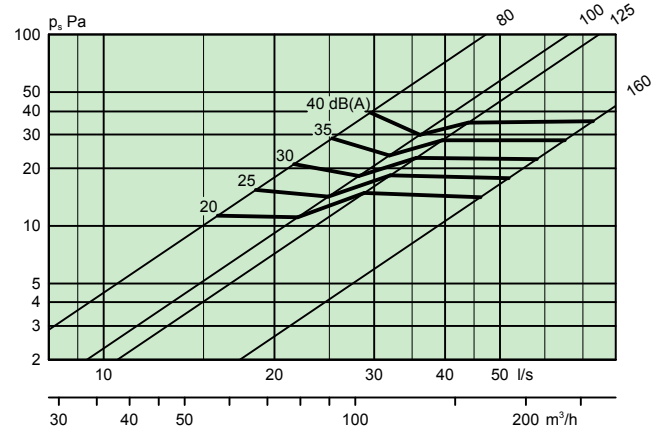
Sound power level L_w (dB)

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

Sizing diagram

CIRCO - One transfer unit



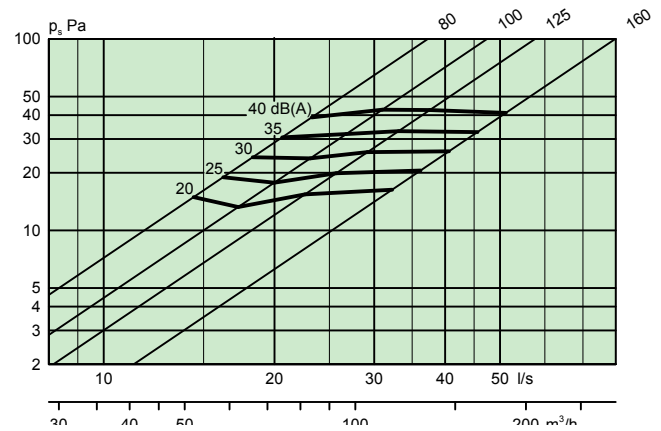
**CIRCO - One transfer unit +
disc valve, TRAC, s = 15 mm**

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



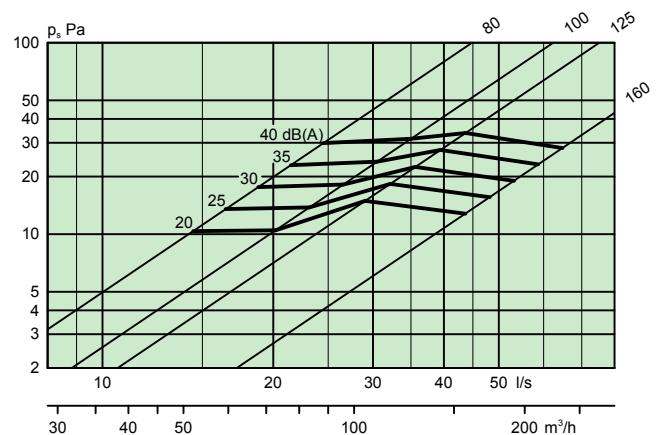
CIRCO - Double transfer units

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

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.

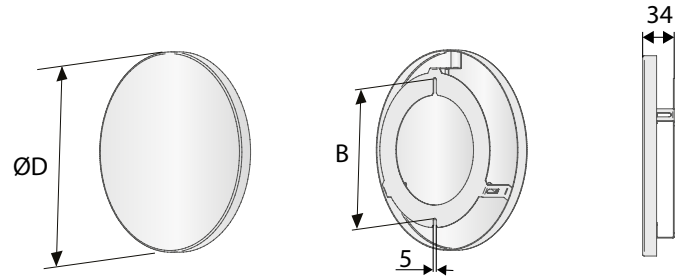


Figure 4. CIRCO, dimensions.

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.

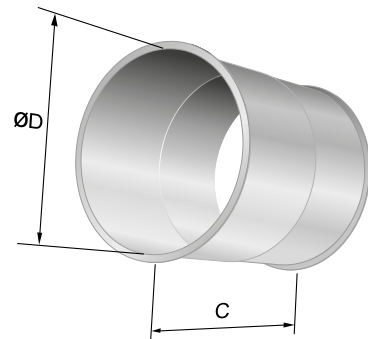


Figure 5. VGC, dimensions.

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

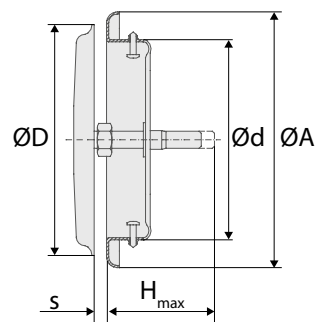


Figure 6. TRAC, dimensions.

