

SOTTO

Sound-attenuating transfer unit



QUICK FACTS

- 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
- Standard colour White RAL 9003
 - 5 alternative standard colours
 - Other colours upon request

AIR FLOW - PRESSURE DROP - R_w VALUE								
SOTTO Size	Hole (mm)	10 Pa		15 Pa		20 Pa		$R_{w,D_{new}}$ (dB)
		l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h	
80-100	80	14	50	17	61	19	68	55
80-100	100	16	58	19	68	23	83	55
125-160	125	21	76	25	90	29	104	51
125-160	160	23	83	27	97	31	112	51

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 rectangular 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. Open slots in the short sides. The baffles are to be hung up on mounting frames supplied.

Materials and surface treatment

The sound baffle and mounting frame are made of galvanised sheet steel. The baffle is 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
 - White semi-gloss, 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. The front of the transfer unit can be provided with text, such as the company name. Please contact your nearest sales office for information.

Accessories

Disc valve

TRAC

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

- 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
 - White semi-gloss, lustre 40, RAL 9010
 - Black semi-gloss, lustre 35, RAL 9005
 - Grey semi-gloss, lustre 30, RAL 7037

Wall sleeve

VGC

Circular telescopic wall sleeve made of galvanized sheet steel.

Installation

Cut the opening according to Table 1. Secure the mounting frame with screws on the wall. Press the sound baffle to engage it over the spring fasteners of the mounting frame, see figure 1.

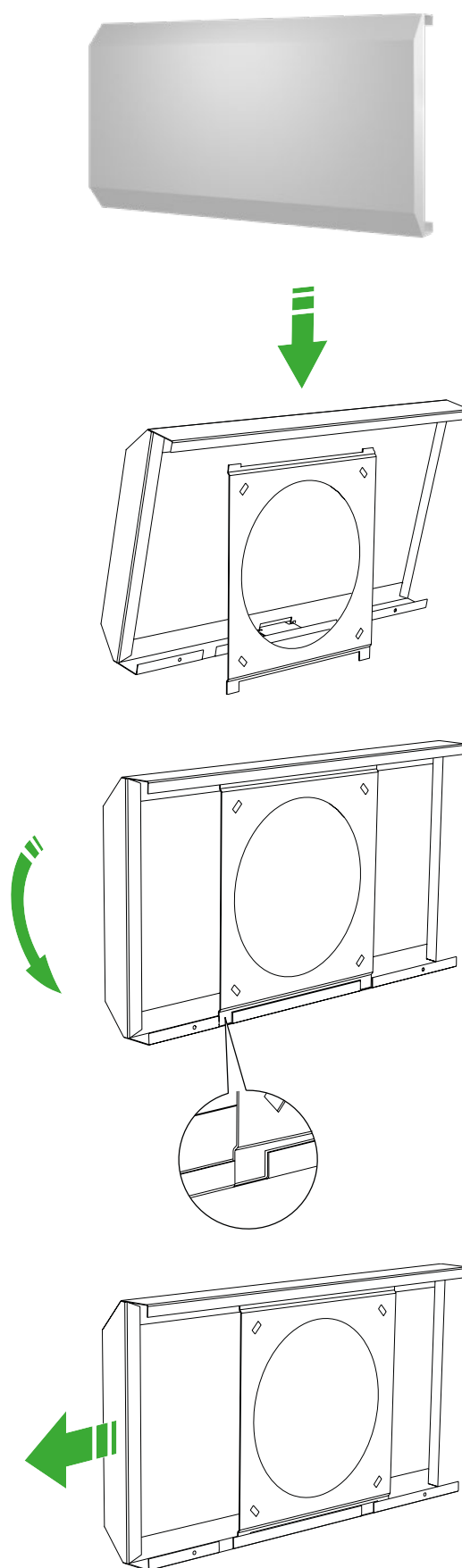


Figure 1. Installation.

Project planning

- The diffuser is designed for installation in a 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

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 Material Declaration is available for downloading at www.swegon.com.

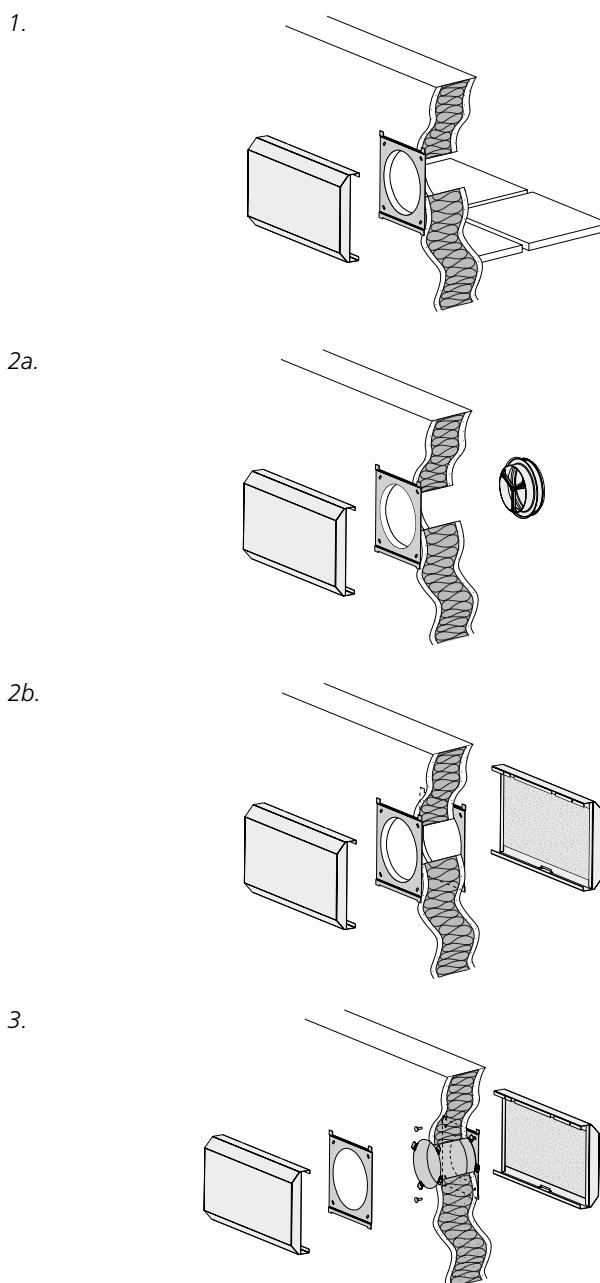


Figure 2. Application options.

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

Table 1

Size SOTTO	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		
80-100	80	54	55	55	Decreases -3 dB	Decreases -10 dB
80-100	100	53	54	55	Decreases -3 dB	Decreases -10 dB
125-160	125	49	47	51	Decreases -3 dB	Decreases -10 dB
125-160	160	48	48	51	Decreases -3 dB	Decreases -10 dB

Double transfer units = One unit on each side of the wall.

Standard delivery of one transfer unit.

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 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.

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

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:

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

R_{tot} = The total reduction index for wall with transfer 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.

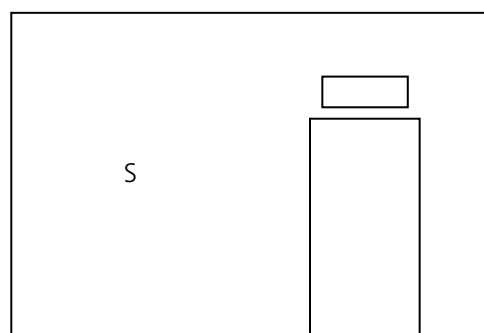


Figure 3. Transfer unit above door, S = wall area.

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.

SOTTO - One transfer unit

Sound power level L_w (dB)

Table K_{OK}

Size SOTTO	Cut opening in wall (mm)	Mid-frequency (octave band) Hz							
		63	125	250	500	1000	2000	4000	8000
80-100	80	5	6	5	5	-4	-21	-24	-28
80-100	100	9	7	6	4	-3	-11	-21	-27
125-160	125	17	13	6	3	-4	-13	-24	-28
125-160	160	14	9	4	3	-1	-9	-20	-28

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

Sound power level L_w (dB)

Table K_{OK}

Size SOTTO	Cut opening in wall (mm)	Mid-frequency (octave band) Hz							
		63	125	250	500	1000	2000	4000	8000
80-100	80	10	11	8	4	-8	-19	-28	-28
80-100	100	10	11	8	4	-6	-15	-27	-29
125-160	125	14	13	7	3	-4	-13	-22	-27
125-160	160	17	13	7	2	-6	-16	-26	-28

SOTTO - Double transfer units

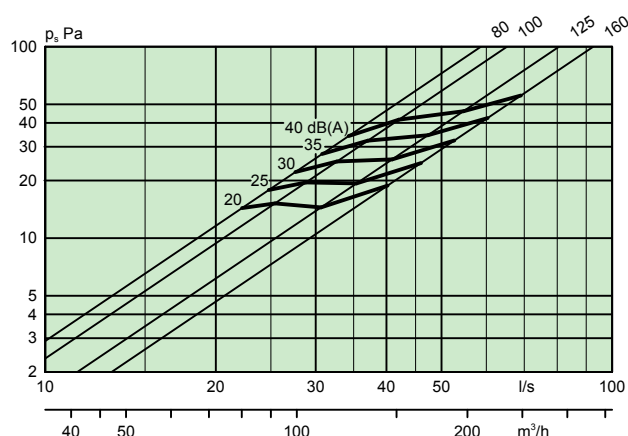
Sound power level L_w (dB)

Table K_{OK}

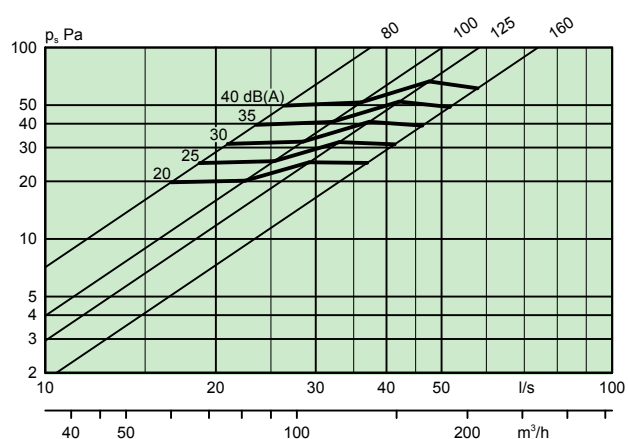
Size SOTTO	Cut opening in wall (mm)	Mid-frequency (octave band) Hz							
		63	125	250	500	1000	2000	4000	8000
80-100	80	12	12	7	4	-8	-20	-29	-28
80-100	100	9	7	6	4	-3	-11	-21	-27
125-160	125	17	13	6	3	-4	-13	-24	-28
125-160	160	14	9	4	3	-1	-9	-20	-28

Sizing diagram

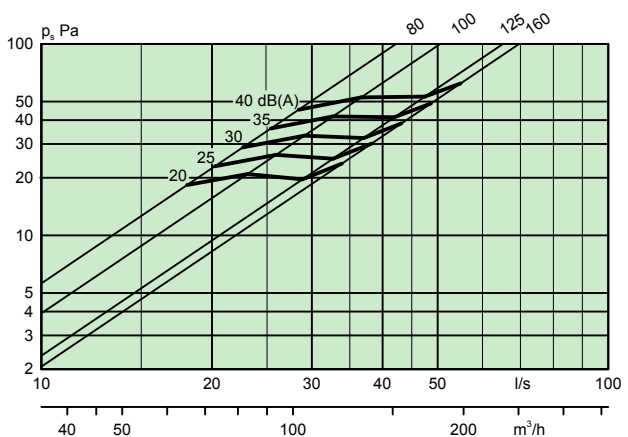
SOTTO - One transfer unit



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



SOTTO - Double transfer units



Dimensions and weights

SOTTO

Size	Dimensions (mm)					Weight (kg)
	A	B	C	ØD	ØI	
80-100	170	110	167	100	80	0.74
80-100	170	110	167	100	100	0.74
125-160	220	160	217	160	125	0.88
125-160	220	160	217	160	160	0.88

Size of the opening, SOTTO = ØI.

NOTE! Two physical sizes.

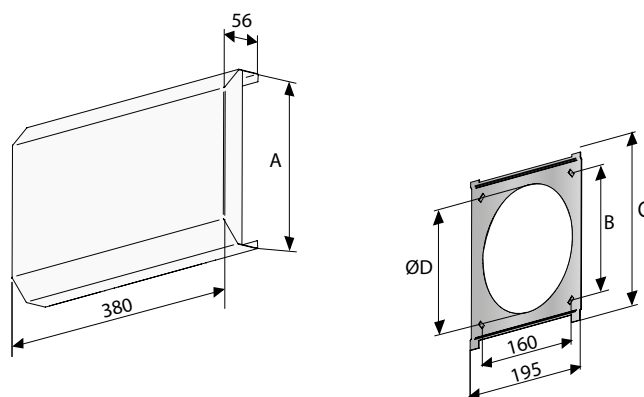


Figure 3. SOTTO, dimensions.

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.

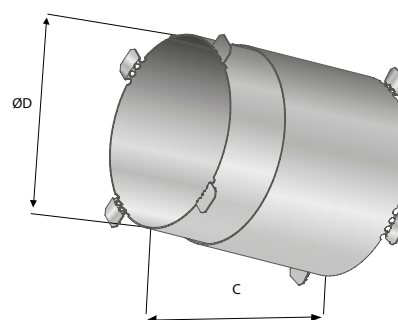


Figure 4. VGC, dimensions.

TRAC

Size	Dimensions (mm)					Weight (kg)
	ØA	Ød	ØD	H _{max}	s	
80	100	77	90	35	15-20	0.16
100	120	97	110	45	15-20	0.19
125	150	122	140	45	15-20	0.26
160	190	157	180	55	15-20	0.37

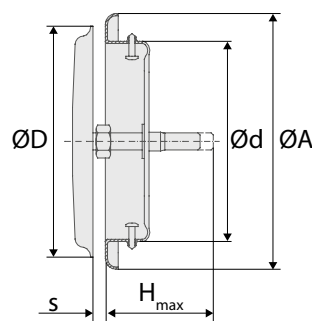


Figure 5. TRAC, dimensions.

Ordering key

Product

Sound-attenuating transfer unit	SOTTO	a	bbb
Version:			
Size: 80-100, 125-160			
Two physical sizes.			

Accessories

Circular wall sleeve	VGC	a	bbb
Version:			
For SOTTO	80-100:	VGC	80 or 100
	125-160:		125 or 160

Disc valve	TRAC	a	-bbb
Version:			
For SOTTO	80-100:	TRAC	80 or 100
	125-160:		125 or 160

Specification text

Swegon's type SOTTO rectangular sound attenuating transfer unit, with the following features:

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

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