

Econox overflow grille with noise reduction

Description and function

Air transfer units play an important role in optimizing indoor comfort by facilitating the movement of air between neighboring spaces, such as residential, hotel, or office rooms, while ensuring a good system balance, low resistance, and sound levels. The Econox overflow grille is an optimal solution designed to address these needs. The Econox grille emphasis on aesthetics, functionality, noise reduction, and ease of installation ensures effective integration into a variety of ventilation systems, making it a valuable component in achieving an optimal indoor environment.

The Econox overflow grille comes standard with two identical pressed front plates in a circular design, featuring sound absorbing insulation within each plate. The diffusers are designed with a slim profile, ensuring that each set seamlessly blends into diverse architectural settings. Supplied as standard with bayonet-type mounting frames, each diffuser is fastened on both sides of a wall dividing two rooms, positioned across from each other just above the doors, allowing air to move freely through the opening in the wall and between spaces.

Standard sizes

Ø100, 125, 160, 160 XL

Airflow range

86 - 162 m³/h (24-45 l/s), pressure drop: 15 Pa

Materials and finish

The front plate and bayonette-type frame are made of galvanised steel, available in RAL 9003 color. Cleanable surface coated insulation from 100% recycled, non allergenic, hydrophobic PET material.



Main characteristics

- Transfer unit with a circular design
- Optimal noise reduction qualities
- Aesthetic appearance
- Easy to mount

T.1. Quick selection

Size [mm]	Airflow [l/s] [m ³ /h] at different pressures			Sound attenuation ** R _w [dB]
	10 Pa	15 Pa*	20 Pa	
100	20 [72]	24 [86]	28 [101]	47
125	25 [90]	31 [112]	35 [126]	45
160	38 [137]	45 [162]	53 [191]	39
160-XL	38 [137]	45 [162]	53 [191]	42

*Recommended max. pressure drop.

**Applies to a reference area of 10 m².

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Installation and commissioning

Please read the instructions carefully before installation. Special attention has to be paid to the parts marked with the symbol above.

Application

The product is designed for air transfer between spaces, so the product is delivered in pairs including mounting frames.

Installation

- Take care when unpacking and assembling, do not use tools that can scratch or damage the product surface.
- The product is mounted in pairs with the help of the mounting frames.
- Mounting frames are mounted on both side of the wall, on the wall openings (The inner diameter of the mounting frame is the same for all sizes. The diameter of the wall opening should be equal to the nominal diameter of the product - ØD).
- Each frame part is marked with an arrow symbol. The arrow is pointing to the ceiling for a proper wall mounting (See: Figure 01).
- The center line of the frame (horizontal position), is marked with two „>” -shaped signs for easier marking during hole-making and drilling (See: Figure 01-a).
- The frame part is secured with screws (not included) via the pre-drilled holes (See: Figure 01-d).
For secure fastening, fasteners appropriate for the wall type must be used.
- After installing the mounting frame, insert the hooks of the Econox grille transfer unit into the slots in the frame and push it down until it clicks.

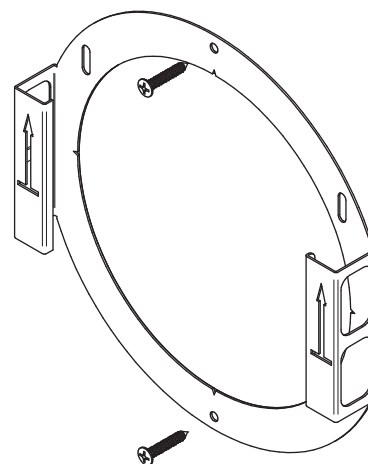


Figure 01 - The frame has to be mounted to the wall with fixing screws through the holes of the frame

Project planning

In order to achieve optimal performance of the product, the following considerations should be taken into account during design:

- Product data presented is based on installation in an insulated wall. For optimum product performance, it is recommended to install the unit into an insulated wall.
- Placement of air diffusers, regardless of wall type, should be in full stud bays. Placement across studs causes undesirable interference with the wall construction and should be avoided as this both reduces the flow capacity of the product and makes installation more difficult.
- The absence of any type of protective measure against fiber penetration from insulated walls usually results in a remark with action required in connection with the final inspection of the ventilation system.

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Dimensioning

- Take into account the reduction of a wall's reduction ratio with an overhead diffuser fitted.
- For products installed in walls without sound-absorbing properties (concrete, brick walls or ductwork in walls), the reduction ratio RW is reduced by about 6 dB.
- The diffuser's reduction factor is reported for reference areas at 1 m², 2 m² and 10 m² (See: Table 03).
- If R-values are required for other areas (X m²), the following formula is used:

$$R_{1\text{-new}} = R_1 + 10 \times \log (X \text{ m}^2 / \text{diffuser's reference area in m}^2)$$
- See section Calculation of the sound attenuation factor for further instructions and calculation assistance.
- Airflow capacity is reported for reference pressure drops at 10, 15 and 20 Pa (See: Table 04).
- The measurements have been carried out according to EN ISO 10140-2:2010.

T.2. Sound attenuation

Size	Sound attenuation index R_w (dB) for reference size		
	1 m ²	2 m ²	10 m ²
100	37	40	47
125	35	38	45
160	29	32	39
160-XL	32	35	42

Tol. ±3 dB

T.3. Airflow capacity

Size	Max. airflow [l/s][m ³ /h] at different pressures		
	10 Pa	15 Pa	20 Pa
100	20 [72]	24 [86]	28 [101]
125	25 [90]	31 [112]	35 [126]
160	38 [137]	45 [162]	53 [191]
160-XL	38 [137]	45 [162]	53 [191]

*Recommended max. pressure drop.

T.4. Correction K_{ok} [dB]

	Hz					
	125	250	500	1000	2000	4000
100, 125, 160	+4	+2	0	-3	-12	-20

Tol. ±3 dB

Calculation of the sound attenuation factor

The following guideline should be followed to calculate the sound attenuation factor of a wall when a ventilation element is installed.

T.5. Calculation guide

Notation	Designation	Calculation/ Formula
A_0	Total wall area [m ²]	
A_1	Reference dimension of the ventilation element [m ²]	
A_q	Reference dimension of the ventilation element [m ²]	$A_q = A_0 / A_1$
R_0	The wall's sound attenuation factor in a specific octave band [dB] (alternative RW value)	
R_1	The sound attenuation factor of the ventilation element in a specific octave band [dB] (alternative RW value)	
R_{dif}	The difference between the sound attenuation factors of the wall and the element [dB]	$R_{dif} = R_0 - R_1$
R_{red}	Decrease in the sound attenuation factor of the wall [dB]	
R	The sound attenuation factor of the wall when installing a ventilation element [dB]	$R = R_0 - R_{red}$

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Assumptions

- The calculation example is based on a total wall area (A_0) of 8 m².
- The sound attenuation factor of the wall (R_0) is 50 dB.
The size of the ventilation element is Ø125.

- the Diagram 01: Sound attenuation and reference size, the red marking $\approx 6,9$ dB.
Calculate the sound attenuation factor of the wall after installing the ventilation element:
 $R = R_0 - R_{red} > 50 - 6,9 \approx 43,1$

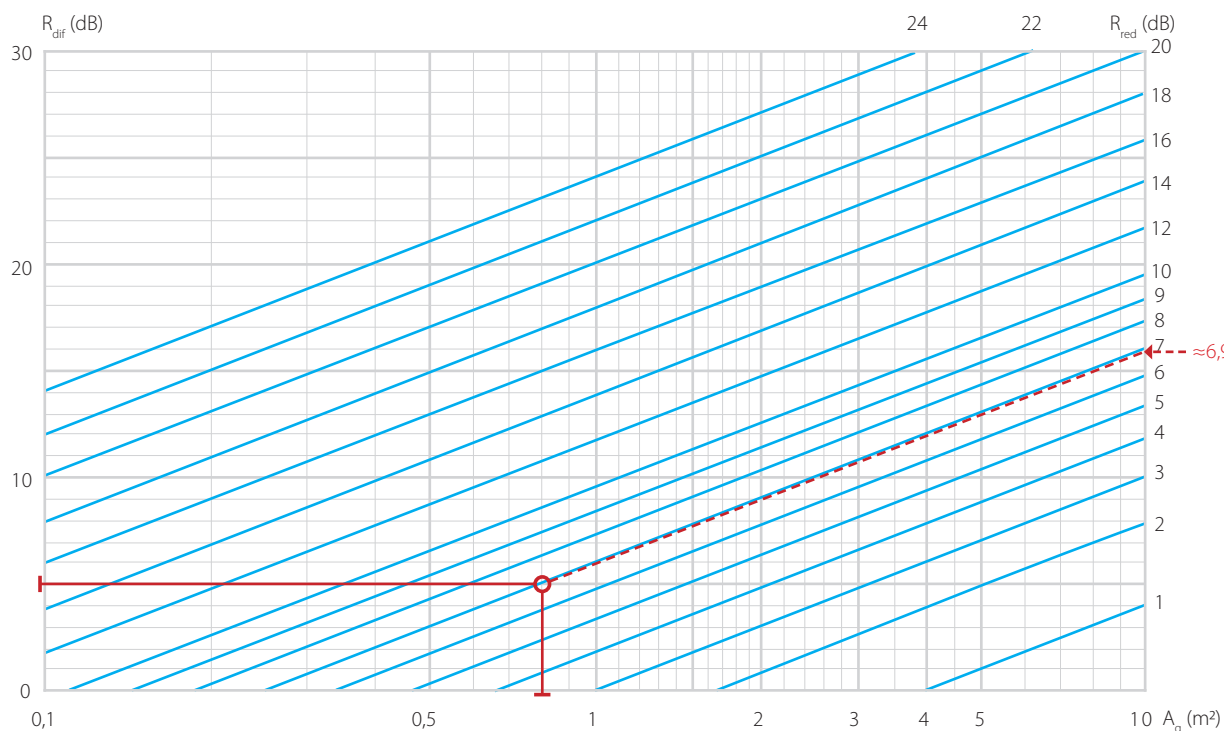
Procedure (red marking on the diagram)

- Calculate the surface ratio between the wall and the element (A_q):
 $A_q = A_0 / A_1 > 8 / 10 = 0,8$
- Read the sound attenuation factor of the element (R_1) (Ø125 = 45 dB).

Calculate the difference between the sound attenuation factors of the wall and the element (R_{dif}):

$$R_{dif} = R_0 - R_1 > 50 - 45 = 5$$

Read the intersection point (R_{red}) of R_{dif} and A_q on



D.1. Sound attenuation and reference size

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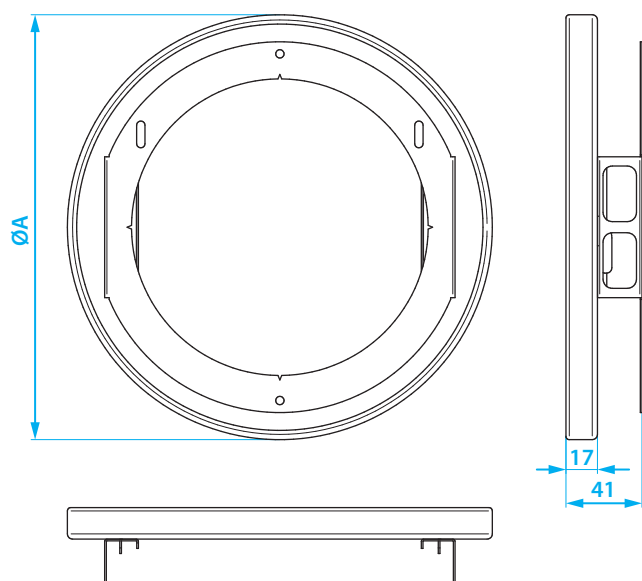


Figure 2. Dimensions, Econox grille typical example shown together with fixing frame

T.6. Econox grille dimensions and weight

Type ØD*	Dimensions [mm] ØA	Weight** [kg]
Econox grille-100/125/160	230	1,0
Econox grille-160XL	283	1,3

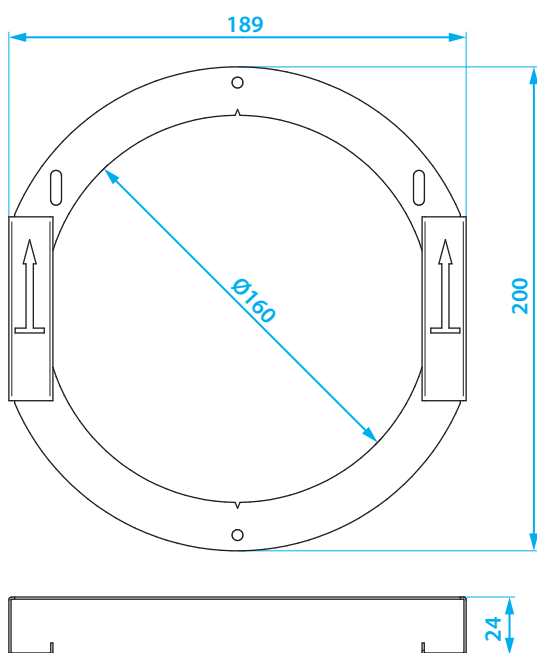


Figure 3. Fastening frame RAM-Econox grille