




**MANUFACTURING
WITH INNOVATION**
In the UK since
1993

Acoustic Ventilators



caice.co.uk

As acousticians, we believe that everyone should enjoy **quiet, comfortable rooms**



Discreet, natural ventilation with high sound insulation

Natural ventilation systems introduce air paths in the façade that undermine the sound insulation performance of the building structure, so we have designed and developed a highly effective range of Acoustic Ventilators to neatly and discreetly solve this problem.

Fresh air is essential for the well-being of everyone inside a building. If not considered at the right time or appropriate way, natural methods of fresh air ventilation can be noisy and disturb the occupants comfort in a space.

Unobtrusive and easily integrated into your rooms

Our Acoustic Ventilator range is for residential and hotel bedrooms primarily but can be adapted for almost any project where background or trickle ventilation is required.

Products are integrated unobtrusively into the building façade, below lintels and above windows. Flush finished externally, they can also be polyester powder painted for a superior appearance and to match your window design. Internally, they can be concealed within a bulkhead. Non-active (or dummy) versions are also available to maintain a consistent aesthetic appearance inside and out.

Choose from our standard range, have them tailored or specify a bespoke solution

Each of the standard products from our core range can be tailored to suit your design requirements or the physical constraints for the given application. Having listened to you, our experts will then help you specify the best product. If you need a totally bespoke solution, we can develop the concept, undertaking acoustic and aerodynamic tests to give you confidence in their performance.

Forced ventilation systems

We have a separate range of Attenuators, Acoustic Louvres, Acoustic Screens or Enclosures that reduce noisy forced ventilation systems to very low and comfortable levels.

Two methods of installation

Either exposed or concealed within a bulkhead

General installation

The Caice Acoustic Ventilator is not designed to be a load-bearing element, but it will be self-supporting when fixed appropriately within an overall façade. It is intended to be installed directly below the lintel at the head of the window aperture.

Depending on each particular project, the ventilator can be installed in the façade prior to the installation of the windows, or can be integrated within the window frame by the window manufacturer.

Exposed method

Concealed brackets are fitted to the underside of the lintel above the window. The Acoustic Ventilator can then be pushed into position using the button fixings.



THERMAL BREAK
incorporated as standard

ACOUSTIC PERFORMANCE
to $D_{n,e,w}$ 48dB

MEETS VENTILATION REQUIREMENTS
of Approved Document F 2010.

DESIGN
allows for fixing of windows to structure

Bulkhead method

Fitted on the underside of the lintel above the window

Side brackets available

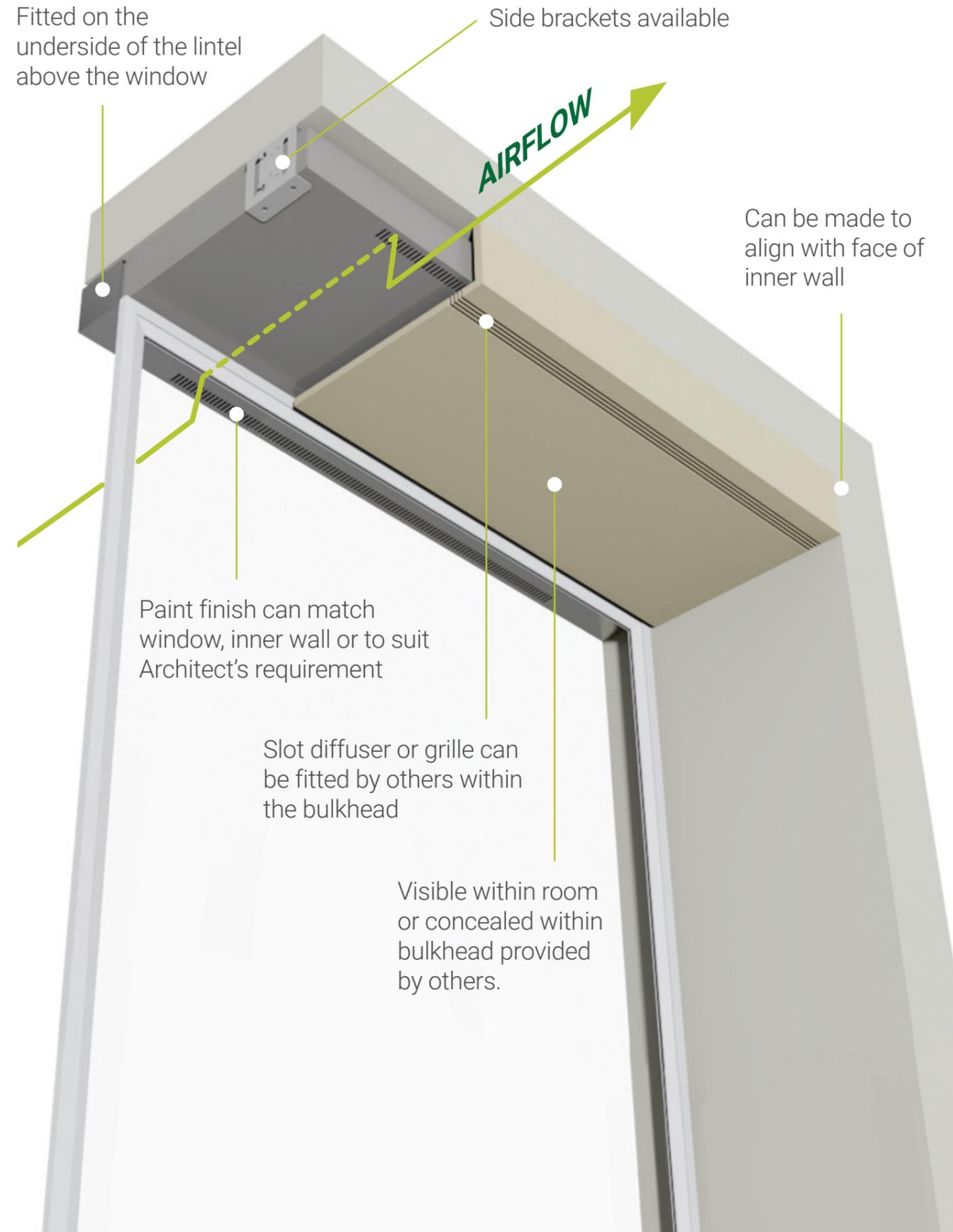
AIRFLOW

Can be made to align with face of inner wall

Paint finish can match window, inner wall or to suit Architect's requirement

Slot diffuser or grille can be fitted by others within the bulkhead

Visible within room or concealed within bulkhead provided by others.



Range overview



Standard Active Ventilator

Bottom Slots on External Cap and Internal Body

The image above shows an example of a typical standard active acoustic ventilator. The unit comprises an External Cap and an Internal Body.

The air inlet slot provides a degree of protection against the ingress of insects and very small airborne objects. The air outlet slots into the room are positioned on the under-side of the unit.

The External Caps and Internal Body of the ventilator can be polyester powder painted to match or complement the colour of the window or façade.



Bottom Slots on External Cap and Face Slots on Internal Body

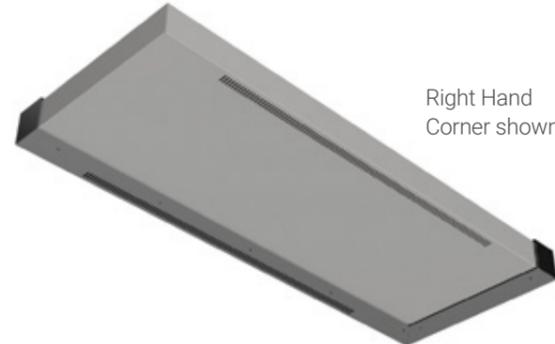
Identical to the ventilator left but the air outlet slots into the room are now positioned on the inner face of the unit.



Left Hand Corner shown

Corner Active Ventilator

Bottom Slots on External Cap and Face Slots on Internal Body



Right Hand Corner shown

Bottom Slots on External Cap and Internal Body



Standard Dummy Ventilator

No Slots

The image above shows an example of a typical non-active dummy ventilator.

There is no air path through the dummy ventilator. These are therefore intended for use where active ventilators are not required, but where a matching appearance is necessary.



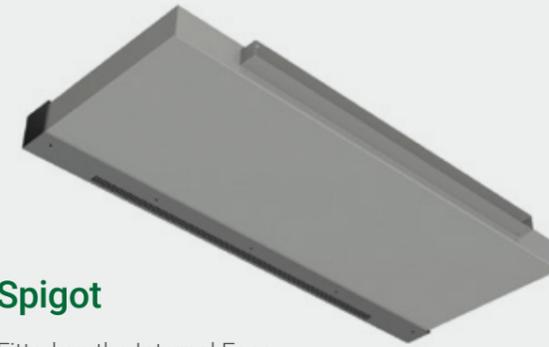
Right Hand Corner shown

Corner Dummy Ventilator

No Slots

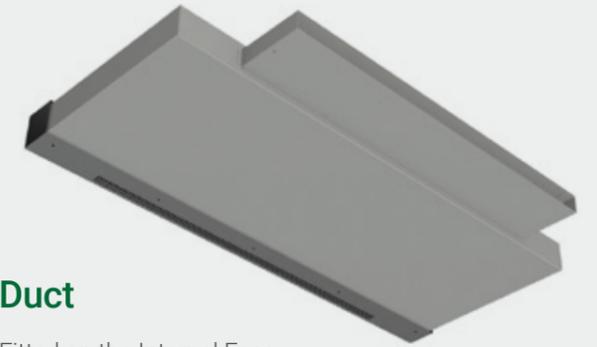
Identical to the dummy ventilator left but for a corner application.

Options overview



Spigot

Fitted on the Internal Face



Duct

Fitted on the Internal Face.
A Spigot must be provided for fitting the Duct



Internal Grille

For adjusting Air Flow

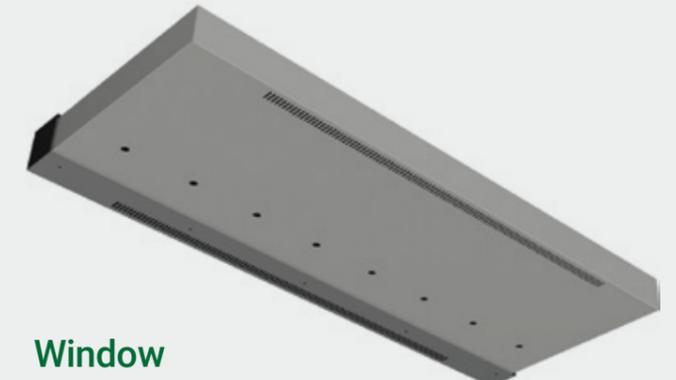


External Cap Insets



Extended External Cap

standard length is 55mm but can be extended up to 165mm



Window Fixing Holes

For fixing the Ventilator via the Window Frame

Performance and Specification

Performance and Dimensions

The table below provides a guide to the typical dimensions and performance parameters that are achievable when using our acoustic ventilator product. Please contact Caice and speak to one of our Engineers for guidance on any other specific design requirement.

Ventilator Dimensions (mm)			Ventilator Performance							
Width	Height	Length	Equivalent Area (mm ²)	Sound Reduction (Dn,e,w)	Sound Reduction (Dn,e,1/1 Oct)					
					125	250	500	1000	2000	4000
500	60	250	2983	40	36	31	33	43	50	68
1000			6074	38	32	27	31	40	48	65
1500			9132	36	31	26	30	39	48	64
2000			12224	35	29	25	28	37	46	63
500	60	400	2983	47	37	36	40	53	62	68
1000			6074	44	33	34	37	50	61	65
1500			9132	42	32	31	35	49	61	64
2000			12224	41	30	30	34	47	59	63

This performance data is based on an overall slot width typically 20mm less than the ventilator widths shown above.

If required the overall slot width can be varied to adjust equivalent area and sound reduction performance. For example on a 2000mm wide ventilator if the equivalent area required was only 6074mm² then the overall slot width could be reduced to 1000mm, which would give a sound reduction of 44 Dn,e,w for a 400mm long ventilator.

Equivalent area is proportional to the ventilator width. Therefore if you double the width you double the equivalent area.

Sound reduction increases by 3 dB when you halve the ventilator width.

Width range is from 100 to 2390mm in a single piece. Units can then be built up in modules to suit larger widths.

Height is fixed at 60mm.

Length range is from 175 to 400mm for active ventilators and from 125 to 400 for dummy ventilators.

Dn,e,w sound reduction performance was measured in an independent acoustic test facility in accordance with BS EN 20140-10:1992.

Equivalent area measurements were undertaken at the Caice test laboratory in accordance with BS EN 13141-1: 2004.

Product Specification

Acoustic ventilators as manufactured by Caice Acoustic Air Movement Ltd. shall be configured to achieve the acoustic and aerodynamic performance parameters for the project.

Active acoustic ventilators shall be constructed from galvanised sheet steel, and shall contain acoustic media with Class "0" fire rating in accordance with BS 476 Part 24. The ventilator shall comprise an external cap with inlet air slots fitted to an internal body with outlet air slots, which together form the air path through the ventilator. The external cap shall provide a degree of protection against the ingress of small airborne objects, and shall incorporate a thermal break. Polyester powder paint finish shall be applied to specific parts of the ventilator as required by the project Architect.

Non-active dummy ventilators shall be provided to a similar specification, but as they are non-air passing they shall not contain acoustic media or be provided with inlet and outlet slots.

The ventilators shall be delivered to site suitably protected to prevent the ingress of dirt whilst on site, and to avoid damage to any paint finishes. The ventilators shall facilitate fixing back to the structure at the head of the window. The ventilators shall be provided with optional fixing brackets if required by the particular installation conditions for the project.

Information Required

General

The Caice Acoustic Ventilator is usually installed in conjunction with other architectural elements. The selection, co-ordination and specification of the product in any given application should therefore ideally be considered by the Project Architect.

Selection information

To enable Caice to configure and select an appropriate acoustic ventilator for any given project, the following design information should be provided:

Equivalent area (mm²)

Equivalent area is a reflection of the required ventilation rate. This parameter should be determined by the designer based on the guidance given in the relevant applicable documentation (please refer to the Supporting Information on the following page).

Conversion to Airflow

Equivalent area is assessed in accordance with BS EN 13141-1: 2004 (Clause 4). The calculation from BS EN 13141-1: 2004 is as per below and can be rearranged to determine airflow:

$$A = Cq_v$$

where:

A is the equivalent area (mm²)

q_v is the volume flow rate for a certain pressure differential (l/s)

C is a constant as given in the table below.

	ΔP (Pa)					
	1	2	4	8	10	20
C	1272.5	899.7	636.2	449.9	402.4	284.5

Acoustic performance

The required ventilator performance is normally expressed in terms of a single figure Dn,e,w value, or as spectral Dn,e values.

The specified acoustic performance requirements for the ventilator should be derived from a detailed acoustic assessment. This would usually involve a site survey, and an assessment of the composite sound reduction of the elements which will form the building façade.

Should you require an acoustic consultant to complete this service then please contact Lee Cunningham Partnership, our acoustic consultancy division, who will be happy to advise.

Dimensional constraints

Dimensional constraints will be dictated by the construction of the building and make-up of the façade in which the ventilator is being installed. Ideally an architectural drawing detailing the section through the window head should be provided, along with a window schedule. Architectural elevations of the windows are also useful when configuring multi-section ventilators.

Supporting Information

Ventilation and Acoustics

Ventilator performance is determined by the Building Regulations Approved Document F and CIBSE Guide B.

Approved Document F focuses mainly on dwellings and offices. It contains a section for other buildings such as hotels and laboratories. For each of these, there is a cross-reference to CIBSE Guide B although some others are also referenced, such as CIBSE AM10: Natural Ventilation in Non-domestic Buildings.

Applicable Documentation

Approved Document F: 2010

The current version of Approved Document F now details ventilation requirements in terms of a ventilator's Equivalent Area which is a property of the ventilator that can be accurately derived by airflow measurement. The equivalent area will vary with relation to the geometric free area of the ventilator, which in turn will need to be sized according to the specified ventilation rate (such that only a 1Pa pressure differential will be generated across the ventilator).

CIBSE Guide B

CIBSE Guide B provides ventilation rates applicable to building types other than dwellings and specifies various criteria.

Intrusive Noise

For any building, the composite sound reduction of all the associated façade elements will be one of the factors which influences the level of intrusive noise to the internal spaces. Guidance on acceptable noise levels can be obtained from such documents as BB93 (Building Bulletin 93 Acoustic Design for Schools), HTM08-01 (NHS Health Technical Memorandum 08-01 Acoustics) and BS8233 (Sound Insulation and Noise Reduction for Buildings).

Tailored and Bespoke Ventilators

Increasing the width of the ventilator or the width of the air slots will tend to increase the equivalent area and help achieve higher ventilation rates. However this needs to be balanced with the required acoustic performance parameters, as generally the acoustic performance of the ventilator will reduce with increased geometric or equivalent areas.

Where acoustic design is critical to any particular project, and an existing ventilator configuration is not suitable, then project specific airflow and acoustic testing should be considered.

Acoustic Ventilator Product Code Definitions

Product

AV Acoustic Ventilator

Type

- SA060** Standard active, 60mm high
- SD060** Standard dummy, 60mm high
- CA060** Corner active, 60mm high
- CD060** Corner dummy, 60mm high

Options

- | | |
|------------------------------------|---|
| F Fixing brackets | E Extended external cap |
| C Concealed fixing brackets | I Inset external cap |
| W Window fixing holes | Y Standard product variant (different slots) |
| G Internal Grille | X Special |
| S Spigot | |
| D Duct | |

Material

- G** Galvanised Steel

Delivery

- 001-999** Cost items delivered to site
- Suffix P** Protective packaging



Format

- BB** Bottom slots external & internal
- BF** Bottom slots external & face slots internal

Finish

- A** Standard polyester powder paint
- B** Premium polyester powder paint
- C** Premium plus polyester powder paint
- M** Mix of polyester powder paint (A, B or C)
- U** Unfinished base material
- Suffix E** External cap only
- Suffix I** Internal body only
- Suffix W** Whole product

Specifying the Acoustic Ventilator

Acoustic Ventilator specification

We're here to help and can provide a detailed specification for your project.

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