

Permanent Ventilators (for the Supply of Combustion Air)

Introduction

All heating appliances that produce heat from the combustion of carbon based fuels such as gas, oil and solid fuels including wood, require enough fresh air from outside for complete combustion and to enable the flue/chimney to function correctly to remove the combustion products safely to the outside. Solid Fuel, Wood and Biomass burning Appliances that draw their combustion air from within the dwelling are required by Building Regulations to have installed a fixed permanently open ventilator to provide this air from the outside of the dwelling. Without adequate ventilation there is a danger that the combustion process will be incomplete producing large amounts of carbon monoxide and also that the function of the flue will be impaired. This combination can cause emissions of poisonous gases to the room resulting in sickness and ultimately death to the occupants.

Air Requirements for Solid Mineral Fuel & Wood Burning Appliances

Building Regulations (Approved Document J) give guidance that should be followed on the amount of air that solid fuel appliances require. For closed appliances this is based mainly on their rated heat output. Less efficient appliances such as simple open fires require more air than closed appliances because of the additional air that enters the appliance above the firebed and the regulations give separate guidance on this. The information given below is for quick reference and is extracted from Table 1, Section 2 of the Building Regulations Approved Document J: 2010; Combustion Appliances and Fuel Storage Systems. Note: The air requirement for other fuels, e.g. oil and gas, will be different.

Closed Appliances, e.g. Stoves, Range Cookers or Independent Boilers.

For closed appliances without any draught stabilizer fitted installed in a building where the design air permeability is greater than 5.0 m³/h.m², the air requirement is 550 mm² per kW of rated output above 5kW e.g. for 8 kW this would be:- (8-5) x 550 = 3 x 550 = 1,650 mm²/16.5cm². If the building's design air permeability is less than 5.0 m³/h.m² the air requirement is 550 mm² per kW of rated output.

If the appliance has a flue draught stabilizer fitted then the following air requirements apply:- Installations in buildings where the design air permeability is greater than 5.0 m³/h.m² ; For the first 5 kW of rated output add 300 mm² per kW and then from 5 kW upwards, add 850 mm² per kW. e.g. for 8 kW the air requirement would be: (5x300) + (3x850) = 4,050 mm²/40.5cm². If the building's design air permeability is less than 5.0 m³/h.m²; add 850 mm² per kW of rated output.

Note: It is unlikely that a dwelling constructed before 2008 will have an air permeability of less than 5.0 m³/h.m² at 50Pa unless extensive measures have been taken to improve air tightness. Appendix F of Approved Document J gives additional details.

Open Fires

If the open fire is the simple inset type incorporating a throat forming lintel or gather then the air requirement would be 50% of the cross-sectional area of the throat opening. If the open fire is the free-standing type which does not incorporate a throat then the air requirement would be 50% of the cross-sectional area of the flue. Detailed guidance with examples is given in the above regulations.

For simple inset open fires with a throat the guidance states that the following air requirement is necessary based on the width of the fire opening:-

350mm fire opening = 14,500 mm²/145cm²

400mm fire opening = 16,500 mm²/165cm²

450 mm fire opening = 18,500 mm²/185cm²

500 mm fire opening = 20,500 mm²/205cm²

For fireplace openings greater than 500 mm in width or freestanding open fires that are open to the room on more than one side please see the additional guidance given in the above regulations.

Determining the Size of the Ventilator

Having established how much ventilation is required by the appliance, selecting the correctly sized ventilator to provide this air opening is essential. Geometrically measuring the free area on a ventilator grille may not always be an accurate way to determine the ventilator's true air intake, although this may be the only method available when checking an existing installation. A value, determined by dynamic testing, called the "equivalent area" is considered to be the only true value for a ventilator that shows how much air it is effectively providing. Such things as internal baffles, length of connecting duct or fitment of a weather cowl may affect the equivalent area and only dynamic testing can ascertain a precise "equivalent area". Although the regulations give guidance on how to measure geometrically the free area of any ventilator grille, it is recommended that, when considering the size of a new vent to install, the value of the equivalent free area should be used and not any stated nominal heat input of the appliance as this may be for another fuel or appliance type. The ventilators that are listed in this guide will all clearly specify the equivalent area. Additional detailed guidance is given in Approved Document J paragraphs 1.10 to 1.23.

General Information

There are currently no British Standards covering the design or production of proprietary air vents however they should generally comply and be installed with the following guidelines taken into consideration:-

- BS 493:1995; Specification for airbricks and gratings for wall ventilation.
- Vents for combustion appliances should be non-closable and should not incorporate any additional screens or gauze.
- The size of ventilator openings should be between 9.5 mm and 5 mm
- Vents should not be located externally where they can easily become blocked or flooded or in positions where contaminated air may become entrained e.g. in a car port or near a flue terminal from a gas or oil fired appliance.
- Air vents in internal walls should be located no higher than 450 mm from floor level to reduce the spread of smoke and fumes in the event of a fire. These internal ventilators should be 50% greater in effective free area than the vent which must also be installed in the external wall to bring in the fresh air from outside.
- Air vents installed in cavity walls should not be staggered and should include a duct or sleeve across the cavity. The ducts or sleeves should also have water baffles incorporated to prevent water transfer from the outside across the cavity, otherwise this can cause damp on internal walls. This duct should be of cross-sectional area no less than the opening required.
- In noisy areas acoustic ventilation will be beneficial in reducing the transmission of external noise to inside the property.

Air vents should not communicate with the following:-

- Protected areas such as lift shafts or stairwells
- Bathrooms/shower rooms
- Ventilated roof or underfloor areas that connect with other properties

In affected areas, consideration should be given to the presence of radon gas particularly when intending to supply air from an underfloor space.

Maintenance of Permanent Ventilators

Although generally ventilators require little maintenance they should be subject to a regular inspection as part of the maintenance programme of the appliance and chimney to ensure that the ventilation remains free of obstruction both from external influences such as vegetation growth or other obstacles and also internally, for example insect nesting or general airborne dust accumulation. When visiting an existing installation for the first time, the permanent ventilation should be the subject of a check to ensure that it complies with Building Regulations and the guidelines given above.

4 WARNING NOTICE TO THE CONSUMER

PERMANENT VENTILATION PROVIDED FOR SUPPLYING COMBUSTION APPLIANCES WITH AIR MUST NEVER BE BLOCKED OR RESTRICTED.

See also the note titled 'Permanent Air Vent' at the beginning of Part 4 of this Guide.

Purpose-Made Ventilators for Supplying Combustion Air

Types

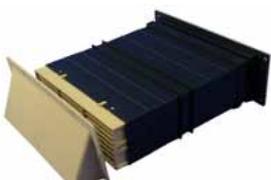
These ventilators are manufactured from a variety of materials such as ceramics and UV stable thermo plastics. They are preferably supplied as boxed sets complete with inner and outer grilles with connecting duct-work for bridging cavity walls and/or making the connection between the two ventilator openings through solid walls. They may incorporate internal baffles to reduce sound transmission and draughts created by sudden changes in air pressure, and weather cowls on the external grille that help also to reduce the effects of draughts and rain ingress.

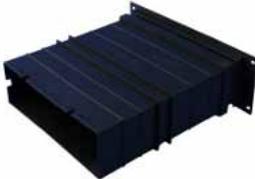
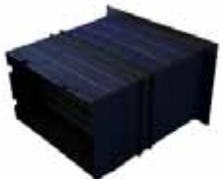
Approvals

Ventilators must comply with building regulations. This is normally achieved through BBA certification to ensure that they meet the applicable aspects of the relevant approved documents of the building regulations. The equivalent area must always be specified by the manufacturer. This value is determined using a dynamic test method that has been developed by Advantica Technology and referenced in BS 5440: Part 2: 2000. The equivalent area must be given in an unambiguous manner where it can easily be read. It is only this equivalent area that should be used when specifying the required sizes of ventilators.

Through-Wall Plastic Ventilators

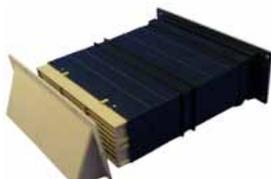
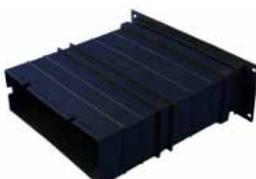
Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p>		<p>Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>
<p>LookRyt AirCore 125mm AC7TUBE Baffled AirCore Tube</p>	<p>15500/155</p>	
<p>Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>LookRyt AirCore 125 mm ACH75LP Highrise Louvre Panel</p>	<p>6800/68.0</p>	
<p>Approval Status: Equivalent Area Values determined by Rytons and witnessed & confirmed by BRE ref. CV5192 dated 21 march 2012</p>		
<p>LookRyt AirCore 125 mm AC7LP Baffled Louvre Panel</p>	<p>7900/79.0</p>	
<p>Approval Status: Equivalent Area Values determined by Rytons and witnessed & confirmed by BRE ref. CV5192 dated 21 march 2012</p>		
<p>LookRyt AirCore 125 mm AC7LPCWL Baffled Louvre Panel & Cowl</p>	<p>8100/81.0</p>	
<p>Approval Status: Equivalent Area Values determined by Rytons and witnessed & confirmed by BRE ref. CV5192 dated 21 march 2012</p>		

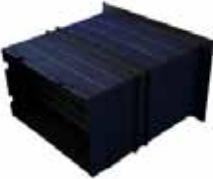
Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p>		<p>Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>
<p>LookRyt AirCore 125 mm AC10TUBE AirCore Tube</p>	<p>23900/239</p>	
<p>Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>LookRyt AirCore 125 mm AC10LPCWL Louvre Panel & Cowl</p>	<p>11100/111.0</p>	
<p>Approval Status: Equivalent Area Values determined by Rytons and witnessed & confirmed by BRE ref. CV5192 dated 21 march 2012</p>		
<p>LookRyt AirCore 125 mm AC10LP Louvre Panel</p>	<p>10400/104.0</p>	
<p>Approval Status: Equivalent Area Values determined by Rytons and witnessed & confirmed by BRE ref. CV5192 dated 21 march 2012</p>		
<p>Airlinerspermanent '9x6' Ventilation Set with Flush Louvre Ventilator TCL18</p>	<p>17500/175</p>	
<p>Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>Airlinerspermanent '9x6' Cowed Ventilation Set with Flush Louvre Ventilator TCL18CW</p>	<p>17200/172</p>	
<p>Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>Airlinerspermanent '9x3' Ventilation Set with Flush Louvre Ventilator TCL8</p>	<p>9400/94</p>	
<p>Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>Airlinerspermanent '9x3' Cowed Ventilation Set with Flush Louvre Ventilator TCL8CWL</p>	<p>9100/91</p>	
<p>Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		

Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p> <p style="text-align: center;">RYTONS BUILDING PRODUCTS INNOVATION IN VENTILATION</p> <p style="text-align: right;">Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>		
Airlinerspermanent '9x3' Telescopic AirLiner TCL8000	15900/159	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Airlinerspermanent '9x6' Telescopic AirLiner TCL 18000	32700/327	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Airlinerspermanent '9x9' Telescopic AirLiner TCL2000	46600/466	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Airlinerspermanent '9x9' Ventilation Set with Louvre Ventilator TCL20	26500/265	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Airlinerspermanent '9x9' Cowled Ventilation Set with Louvre Ventilator TCL20CW	24000/240	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		

Acoustic Through-Wall Plastic Ventilators

Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p> <p style="text-align: center;">RYTONS BUILDING PRODUCTS INNOVATION IN VENTILATION</p> <p style="text-align: right;">Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>		
Acoustic AirCore AAC125TUBE Super Acoustic AirCore Tube (358 mm L) (44dB)	9100/91	
Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		

Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p> <p style="text-align: center;">RYTONS BUILDING PRODUCTS INNOVATION IN VENTILATION</p> <p style="text-align: right;">Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>		
Acoustic AirCore 150 mm AAC625 (36 dB)	7906/79.06	
Approval Status: Equivalent Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006		
Acoustic AirCore 150 mm cowled AAC625CW (38 dB)	7511/75.11	
Approval Status: Equivalent Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006		
Acoustic AirCore 150 mm AAC635 (41 dB)	5412/54.12	
Approval Status: Equivalent Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006		
Acoustic AirCore 150 mm cowled AAC635CW (42 dB)	5248/52.48	
Approval Status: Equivalent Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006		
Acoustic Airliners 9" x 3" Set with flush louvre TAL4SET (38 dB)	5800/58	
Approval Status: BBA Agrément Certificate No. 11/4866:First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners 9" x 3" Set with flush louvre (cowled) TAL4CWL (39 dB)	5800/58	
Approval Status: BBA Agrément Certificate No. 11/4866:First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners 9x3' Acoustic AirLiner TAL93 (TAL4000)	17500/175	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		

Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p> <p style="text-align: center;">RYTONS BUILDING PRODUCTS INNOVATION IN VENTILATION</p> <p style="text-align: right;">Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>		
Acoustic Airliners 9" x 6" Set with flush louvre TALSET (39 dB)	6300/63	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners 9" x 6" Set with flush louvre (cowled) TALCWL (42 dB)	5500/55	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Airliners permanent '9x3' Cowled Ventilation Set with Flush Louvre Ventilator TCL8CWL	9100/91	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners '9x6' Acoustic AirLiner TAL96 (TAL8000)	13500/135	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners 9" x 9" Set with flush louvre TAL9SET (38 dB)	13100/131	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners 9" x 9" Set with flush louvre (cowled) TAL9CWL (40 dB)	12200/122	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		
Acoustic Airliners '9x9' Acoustic AirLiner TAL99 (TAL9000)	19100/191	
Approval Status: BBA Agrément Certificate No. 11/4866: First Issue: Dated 19th September 2011. Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013		

Product Name	Equivalent Area mm ² /cm ²	Product Image
<p>Rytons Building Products Ltd Design House, Kettering Business Park Kettering, Northants NN15 6NL</p>		<p>Tel: 01536 511874; Fax: 01536 310455 Email: admin@rytons.com Web: www.rytons.com</p>
<p>RytonsLookRyt Acoustic AirCore AAC125LP Super Acoustic LookRytAirCore (44dB)</p>	<p>7400/74</p>	
<p>Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>RytonsLookRyt Acoustic AirCore AAC125LPCWL Cowled Super Acoustic LookRytAirCore (45dB)</p>	<p>7200/72</p>	
<p>Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		
<p>RytonsLookRyt Acoustic AirCore AAC125LPCWL Cowled Super Acoustic LookRytAirCore (45dB)</p>	<p>7200/72</p>	
<p>Approval Status: Equivalent Area Values given by BRE test memorandum ref 283-275 dated 01-March 2013</p>		