

PART 4

CARE AND MAINTENANCE

A. SAFE AND SOUND WITH SOLID FUEL

1. INTRODUCTION

Many solid fuel fired appliances are expected to "work" 24 hours a day, 365 days a year, keeping us warm and supplied with constant hot water.

However, like any other machines, they work better and last longer when correctly installed, burn the right fuel and are properly maintained. It is therefore important to ensure that new installations are carried out by recognised and established heating engineers and serviced by competent companies working in this area.

Further information on suitable companies can be provided by the organisations listed below.
Keep warm and safe by taking the simple steps below.

2. THE RIGHT FUEL

In order to get the best value for money it is important to burn the right fuel of the correct size on your appliance. If you are in any doubt about which fuel of the many available is suitable for your particular appliance, please telephone your local Approved Coal Merchant or one of the organisations listed below for free advice.

3. AIR SUPPLY

All fuels require an adequate supply of air to make them burn correctly. If too little air is available, fumes that are harmful to your family may escape into the room. If you have double glazing or draught proofing you will need to allow air to enter the room in which the appliance is installed via an air brick or grille. Never seal air bricks or grills up, you may be putting your family at risk. Again seek advice if you are in any doubt.

4. FLUE CLEANING

Many solid fuel fired appliances have flueways through which the hot gases pass to the chimney. These flueways should be swept clean every month to remove any soot or ash. Some stoves and roomheaters have a removable/drop down plate in the top of the fire box - this should also be removed and cleaned once a month. Remember, always let the fire go out the day before cleaning.

5. CHIMNEY SWEEPING

All chimneys must be swept at least once a year preferably by a HETAS registered sweep or other approved sweep. However, if your appliance is used continuously throughout the year or burns wood and coal more frequent sweeping is recommended. The best time to have your chimney swept is at the start of the heating season. It is also strongly recommended that the chimney be swept after any prolonged period when the appliance has not been used, eg holidays, etc. Remember these recommendations apply even if you burn smokeless fuels.

6. ASH REMOVAL

If ash is allowed to build up within the appliance the fire will not burn properly and the appliance may be damaged. Generally speaking, the appliance should be de-ashed before being filled with new fuel. The ashpan should be gently removed from the ash pit area and emptied into a suitable container. A hot ash carrier (a metal box with a lid) is ideal for this purpose. The ash pan should be replaced, the fire bed de-ashed with a poker or the de-ashing mechanism on the appliance and fresh fuel added.

7. FIREGUARDS

Legislation demands that a fireguard must be used to protect children under the age of 12 (7 in Scotland) from touching any heating appliance. Fireguards manufactured to the British Standard are recommended. Remember always use a spark guard with any open fire.

8. CONTACT POINTS

- | | |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solid Fuel Association | - 7 Swanwick Court, Alfreton, Derbyshire DE55 7AS
Freephone 0845 6014406 |
| Approved Coal Merchants Scheme | - 7 Swanwick Court, Alfreton, Derbyshire DE55 7AS
Tel: Freephone 0845 6014406 or see Yellow Pages for local approved Coal Merchant |
| National Association of Chimney Sweeps | - Unit 15, Emerald Way, Stone Business Park, Stone, Staffs, ST15 OSR
Tel: 01785 811732 Fax: 01785 811712 |
| Coal Advisory Service
Northern Ireland | - Northern Ireland Coal Advisory Service, Caroline House, Milewater Basin, Dufferin Road,
Belfast BT3 9AA
Hotline: 0845 7125300 Tel: 02890 751002 Fax: 02890 757318 |

B1. CARBON MONOXIDE DETECTORS/ALARMS

Carbon monoxide is a poisonous gas with no taste, no colour and no smell. It is produced by the incomplete combustion of carbon based fuels such as gas, oil and solid fuels including wood. Tragically each year people die because of carbon monoxide poisoning and others are made ill.

The causes of these deaths usually relate to the incorrect installation of the heater, lack of maintenance of the appliance and its chimney or to inadequate air supply for the appliance to function properly.

Carbon monoxide detectors/alarms are now available and the British Standards Institution has published a Standard (BS EN 50291) for electrical apparatus designed to detect carbon monoxide in domestic premises and to provide an alarm to alert the householder to its presence. HETAS lists below a range of these devices, supplied by members of CoGDEM, which are claimed, or certified, to be manufactured to EN 50291 and which are suitable for use with solid fuel heating appliances.

It should be understood by purchasers and specifiers that claims recorded in the Approval Status column as "Manufacturer claims to BS EN 50291" is a claim of the manufacturer alone and has not been endorsed by HETAS or any Independent Certification/Approval body. Where the claim in the Approval status column quotes a BSI Kitemark, this is an indication that the product has been independently assessed by the BSI which is one of the UK bodies entitled to engage in third party certification and product monitoring.

Purchasers and specifiers should use BS EN 50291 as a basis for product selection. The older standard, BS7860, was withdrawn in 2006. CoGDEM does not recommend the use of "colour change" indicator cards, as these do not have an audible alarm and they have very limited lifetimes.

It is important that the alarm manufacturers' installation and operating instructions are strictly conformed to at all times. Again a new British and European Standard (BS EN 50292) has been produced as a "guide" on the selection, installation, use and maintenance of these detectors/alarms and should be adhered to.

No safety device is infallible and should never be taken as a substitute for initial correct appliance installation or for regular and effective chimney sweeping and proper appliance operation and maintenance by a competent engineer.

When an alarm is activated or if fume emission from an appliance is otherwise detected the fire should be let out, the room evacuated and the doors and windows opened. The appliance must not be used again until checked by a competent heating engineer and shown to be in safe working order.

TABLE OF CARBON MONOXIDE DETECTORS/ALARMS

Model	Manufacturer	Manufacturer's Remarks	Approval Status
FCD3	BRK Brands Europe Ltd	Portable 9v battery operated consumer CO alarm. 5 year guarantee	Designed and tested to UL 2034.
CO400CE	BRK Brands Europe Ltd	Portable battery operated consumer alarm. 5 year guarantee	Designed and tested to UL 2034.
CO410CE	BRK Brands Europe Ltd	Portable battery operated consumer alarm. 5 year guarantee with digital display	Designed and tested to UL 2034.
CO4000	BRK Brands Europe Ltd	Portable battery operated trade CO alarm. 5 year guarantee	Designed and tested to UL 2034.
CO850B (Dicon)	BRK Brands Europe Ltd	9V Battery-operated, portable. Full (gas) self-test function	Kitemark to BS EN 50291: 2001
CO850M (Dicon)	BRK Brands Europe Ltd	Mains-powered, hard-wired. Full (gas) self-test function.	" " " "
CO850MBX (Dicon)	BRK Brands Europe Ltd	Mains-powered, hard-wired with battery backup. Full (gas) self-test function.	" " " "
CO850MRL (Dicon)	BRK Brands Europe Ltd	Mains-powered, hard-wired with rechargeable Lithium battery backup. Full (gas) self-test function.	" " " "
<p>All of the Dicon marked products above are also available with the option of interlink and/or digital display</p>			

TABLE OF CARBON MONOXIDE DETECTORS/ALARMS (continued)

Model	Manufacturer	Manufacturer's Remarks	Approval Status
Ei 261EN	Ei Electronics	Mains Powered Carbon Monoxide Alarm with rechargeable lithium back-up and interconnect (also available with Digital Display Ei261DEN)	BS EN 50291:2001
Ei 225EN	" " "	Mains Powered Carbon Monoxide Alarm	" " " "
Ei 220EN	" " "	Mains Powered Carbon Monoxide Alarm with power cord and plug	" " " "
Ei 204EN	" " "	Battery Powered Carbon Monoxide Alarm	" " " "
Ei 205EN	" " "	Battery Powered Carbon Monoxide Alarm With CO memory function	" " " "
Ei 205CEN	" " "	Battery Powered Carbon Monoxide Alarm with CO memory function and interconnect	" " " "
Ei 206D	" " "	Battery Powered Carbon Monoxide Alarm With Digital Display , CO memory function, Peak level memory and interconnect	" " " "
CO-828	FireAngel Ltd	9v battery operated CO alarm with digital display , provides visual indication of CO levels above 10PPM. Peak level memory, test and silence functions, electrochemical technology. 6 year warranty	LPCB BS EN 50291:2001 Certified
CO-9X	" "	7 year sealed-for-life carbon monoxide alarm. Large test & reset button makes testing easy. Automatic self diagnostic check. Triple LED display shows power, fault and alarm. Anti-tamper bracket with sliding tab and/ or pad printing available (at extra cost). Retail and trade packs available	BSI Kitemark BS EN 50291: 2001 Certified
CO-9B	" "	Battery powered 7 year life carbon monoxide alarm. Large test & reset button makes testing easy. Automatic self diagnostic check. Retail and trade packs available	BSI Kitemark BS EN 50291: 2001 Certified
900-0191	Kidde Fyrnetics	Mains operated, CO alarm, plug-in, alkaline battery back up. Test/reset & Peak level/memory buttons. Line cord for Wall mount Facility.	Kitemarked to BSEN 50291 Licence No. KM 59475 CORGI Approved
900-0211	" "	Mains operated CO alarm, plug-in, alkaline battery back up. Test/reset & Peak level/memory buttons. Digital display. Line cord for Wall mount facility.	" " " "
900 0146	" "	Battery operated CO alarm. Test/reset buttons. Digital display. Wall mount/free standing facility	" " " "
9CO-5UK	" "	Battery operated CO alarm. Test/reset button. LED displays. Wall mount facility	" " " "

table continued

TABLE OF CARBON MONOXIDE DETECTORS/ALARMS (continued)

Model	Manufacturer	Manufacturer's Remarks	Approval Status
900 0122	Kidde Fyrnetics	Battery operated. Combination Ion smoke alarm + Carbon Monoxide Alarm. BRE assessed against UK set points of relevant BS's. Voice warning activates when smoke or CO detected, & battery warning too.	UL 2034 Certified
423d/9hir	" "	Hard wired CO alarm, with Smart Interconnect to all Kidde hard wired smoke & heat alarms. Digital display & peak level/memory. Rechargeable lithium back up. Test & Reset Buttons. Wall or ceiling mount. 6 Year guarantee	Kitemarked to BSEN 50291 Licence No. KM 59475 CORGI Approved
423/9hir	" "	Hard wired CO alarm, with Smart Interconnect to all Kidde hard wired smoke & heat alarms. Rechargeable lithium back up. Test & Reset Buttons. Wall or ceiling mount. 6 Year guarantee	" "
SF450EN	Honeywell Analytics (Domestic Products)	Self contained (sealed batteries) carbon monoxide alarm. 6 year maintenance free guarantee (up to 6.5 year operational life)	Approved and Kitemarked to EN50291:2001. CORGI Approved

B2. FLUE GAS AND AMBIENT AIR CO ANALYSERS

You should use a Flue Gas Analyser for two purposes:

Appliance testing

A Flue Gas Analyser measures the levels of constituents of flue gases. You place the probe in the chimney or appliance exhaust and see what levels of Oxygen (O₂), Carbon Monoxide (CO), Carbon Dioxide (CO₂) and flue gas temperature are present. They are no more complicated to operate than a video camera and perform a similar function as they are your "eyes" inside the appliance. Some analysers offer additional information such as boiler efficiency, data logging, differential pressure and other gas measurements. They should also offer the option to either print or store the measurements for later review.

Flue gas analysers usually display a CO/CO₂ ratio. This shows the ratio of carbon monoxide and carbon dioxide in the exit flue (chimney) of the appliance. The levels which indicate the correct operation of an appliance may vary widely with the fuel burned and appliance type. Reference should therefore, be made to the instrument manufacturer's instructions.

Ambient air monitoring

A Flue Gas Analyser also measures the levels of constituents of room air. This information is invaluable, for example, when attempting to find out if there is CO leaking from an appliance or pinpointing why a CO alarm is being triggered.

An ambient air CO analyser will also monitor ambient levels of CO in any room. This is carried out by first switching the analyser on in fresh, outdoor air to set its zero value, following the manufacturer's instructions. The analyser should only then be taken into the room to be monitored.

If the analyser measures CO levels above 9 ppm, an investigation should be made. Any reading over 35 ppm should prompt immediate action, such as opening all windows and doors, switching off and isolating any appliances present and leaving the room.

A subsequent room retest should be made after each appliance has been checked.

Do not forget that CO levels in rooms can occur from being adjacent to a busy road, car park or garage, as well as from smoking, outdoor barbecues, adjacent properties sharing the same flue systems etc. These factors need to be taken into account when determining whether there is a problem and expert help should be sought. Also national regulations that apply should be consulted when performing appliance installation and servicing.

Finally, whilst every effort is made to ensure accuracy, this document is always subject to revision as more information becomes available on CO sources, levels and appropriate testing methods. Consequently, neither HETAS Ltd nor CoGDEN can be held liable for any information given above.

TABLE OF FLUE GAS AND AMBIENT AIR CO ANALYSERS AND AIR FLOW METERS

Model	Manufacturer	Manufacturer's Remarks	Approval Status
CO75	Kane International	Handheld CO ambient air analyzer measuring to 2000ppm CO – ideal to check room air & CO alarms.	Complies with BS7967 measuring CO in ambient air
CO91	“ “ “ “	As CO75 and also measures boiler flue CO emissions, prints records with time and date	Complies with BS7967 measuring CO in ambient air and boiler flues
Kane 100	“ “ “ “	As CO91 and also measures CO ₂ in ambient air to test flueless gas appliances and commercial kitchens and other workspace air quality	Complies with BS7967 measuring CO in ambient air and boiler flues
Kane 250	“ “ “ “	Handheld flue gas analyser measuring O ₂ , flue temperature, CO, CO ₂ and Efficiency. Easy to use rotary dial, 20 record memory and optional printing of timed and dated records	Complies with EN50379, BS7927 and BS7967
Kane 425	“ “ “ “	As Kane 250 and also measures differential temperature and pressure/draught to 0.001mbar resolution and has Bluetooth data transfer option.	Complies with EN50379, BS7927 and BS7967
Kane 455	“ “ “ “	As Kane 425 with 5 year life sensor guaranteed, if used under normal operating conditions	Complies with EN50379, BS7927 and BS7967
Kane 450	“ “ “ “	As Kane 425 and also measures CO to 10,000ppm and has optional NO _x sensor	Complies with EN50379, BS7927 and BS7967
Kane 900+	“ “ “ “	As Kane 450, measuring O ₂ and CO with option to measure two further gases. 150 records memory can be transferred to PC	Complies with EN50379, BS7927 and BS7967

table continued

TABLE OF FLUE GAS AND AMBIENT AIR CO ANALYSERS AND AIR FLOW METERS (continued)

Model	Manufacturer	Manufacturer's Remarks	Approval Status
Kane 940	Kane International	As Kane 900+ and also has high speed pump and Teflon lined flue probe for emission critical measurements	Complies with EN50379, BS7927 and BS7967
LS1	“ “ “ “	Handheld combustible gas leak detector suitable for domestic premises gas leak testing	
Kane 3100-1	“ “ “ “	Handheld micromanometer, measures 0 to +/- 75mbar with resolution to 0.001mbar / 0.1 pascal. Ideal for tightness and let by tests and also prints timed and dated records	
Kane 3100-2	“ “ “ “	As 3100-1 and also measures 0 to +/- 150mbar with resolution to 0.003mbar / 0.3 pascal	
Kane 3100-5	“ “ “ “	As 3100-2 And also measures 0 to +/- 400mbar with resolution to 0.01mbar /1 pascal	
Kane Fixed Service Costs	“ “ “ “	The Kane fixed price service policy returns instruments to published specification with a full one year warranty to customers – See www.kane.co.uk or call 01707 375550 for more details and prices	
IAQ910	TSI Instruments Ltd	Carbon dioxide (CO ₂) meter is an excellent handheld diagnostic instrument for measuring and monitoring carbon dioxide levels.	
LCA301	“ “ “ “	Rotating Vane Anemometer that provides accurate and reliable readings every time. Light weight, robust, and simple to use and displays readings in metric or imperial mode.	
PVM620	“ “ “ “	Micro-manometer is rugged and compact, measuring pressure, and calculating velocity and volumetric flow rate. It can be used to measure draft pressure and with Pitot tubes to measure velocity and calculate flow rates with user-input duct size and shape.	

B3. 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 and 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: 2002; 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, 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 appliance has a flue draught stabilizer fitted then the following air requirement applies:- 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

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 free 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 free area and only dynamic testing can ascertain a precise "equivalent free 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 free area.

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:-

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 10mm 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.

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.

Continued on next page

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.

WARNING NOTICE TO THE CONSUMER

PERMANENT VENTILATION PROVIDED FOR SUPPLYING COMBUSTION APPLIANCES WITH AIR MUST NEVER BE BLOCKED OR RESTRICTED. See also note A3 at the beginning of this Part 4 of the 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 free 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 free area must be given in an unambiguous manner where it can easily be read. It is only this equivalent free area that should be used when specifying the required sizes of ventilators.

TABLE OF THROUGH WALL PLASTIC VENTILATORS

Manufacturer	Model Name/Product Code	Effective Free Area mm ² /cm ²	Approval status
Rytons Building Products Ltd.	AirCore permanent ventilators:- 125mm AC10 125mm Cowled AC10CWL 125mm Baffled AC7 125mm Cowled Baffled AC7CWL	10000/100 9300/93 7300/73 6390/63.9	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005. Equivalent Free Area Values given by Advantica test memorandum dated March 2001
Rytons Building Products Ltd.	150mm AC11 150mm Cowled AC11CWL 150mm Baffled AC9 150mm Cowled Baffled AC9CWL	11500/115 10000/100 9140/91.4 8455/84.55	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005. Equivalent Free Area Values given by BRE test memorandum dated June 2006
Rytons Building Products Ltd.	Airliners permanent ventilators:- '9x6' Ventilation Set with Flush Louvre Ventilator TCL18 '9x6' Cowled Ventilation Set with Flush Louvre Ventilator TCL18CW '9x3' Ventilation Set with Flush Louvre Ventilator TCL8 '9x3' Cowled Ventilation Set with Flush Louvre Ventilator TCL8CWL	10700/107 9800/98 5350/53.5 5100/51	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005. Equivalent Free Area Values given by Advantica test memorandum dated January 2004
Rytons Building Products Ltd.	'9x9' Ventilation Set with Louvre Ventilator TCL20 '9x9' Cowled Ventilation Set with Louvre Ventilator TCL20CW	16580/165.8 14572/145.72	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005. Equivalent Free Area Values given by BRE test memorandum dated July 2007

TABLE OF ACOUSTIC THROUGH WALL VENTILATORS

The products listed below have been independently tested and rated with a noise attenuation rating in accordance with BS EN ISO 717-1:1997 and this rating is given in brackets next to the product name.

Acoustic ventilation is a way of helping to meet the requirements of Building Regulations Approved Document E and at the same time meeting the requirements of Approved Document J for ventilation. As stated in Approved Document J, paragraph 1.16, "it may be necessary to install proprietary noise attenuated ventilators to limit the entry of noise into the building".

Manufacturer	Model Name/Product Code	Effective Free Area mm ² /cm ²	Approval status
Rytons Building Products Ltd.	Acoustic AirCore permanent ventilators:-		
	125 mm AAC5 (39 dB)	3970/39.7 ^(A)	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005.
	125 mm cowled AAC5CWL (40 dB)	3940/39.4 ^(A)	
	125 mm AAH5 (41 dB)	3880/38.8 ^(A)	(A) Equivalent Free Area Values given by Advantica test memorandum dated 6 th Jan 2004
	150 mm AAC625 (36 dB)	7906/79.06 ^(B)	(B) Equivalent Free Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006
	150 mm cowled AAC625CW (38 dB)	7511/75.11 ^(B)	
	150 mm AAC635 (41 dB)	5412/54.12 ^(B)	
150 mm cowled AAC635CW (42 dB)	5248/52.48 ^(B)		
Rytons Building Products Ltd.	Acoustic Airliners permanent ventilators:-		
	9" x 3" Set with flush louvre TAL4SET (38 dB)	2590/25.9 ^(A)	BBA Agrément Certificate No. 94/3071: Fourth Issue: Dated 22 nd December 2005.
	9" x 3" Set with flush louvre (cowled) TAL4CWL (39 dB)	2580/25.8 ^(A)	
	9" x 6" Set with flush louvre TALSET (39 dB)	3965/39.65 ^(B)	(A) Equivalent Free Area Values given by Advantica test memorandum dated 6 th Jan 2004
	9" x 6" Set with flush louvre (cowled) TALCWL (42 dB)	4033/40.33 ^(B)	(B) Equivalent Free Area Values given by BRE test memorandum ref ED 1643 dated 05 June 2006
	9" x 9" Set with flush louvre TAL9SET (38 dB)	7171/71.71 ^(C)	
	9" x 9" Set with flush louvre (cowled) TAL9CWL (40 dB)	6954/69.54 ^(C)	
		(C) Equivalent Free Area Values given by BRE test memorandum ref ED 2596 dated 19 July 2007	