A6VS – VENTILATION STANDARDS

First Name:
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Email:
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A6VS - Ventilation Standards
Assessment ID : A6VS

Instructions: Select a single answer from all questions

1.

Provision of Ventilation has to be considered in respect of gas appliances for the purpose of complete combustion, compartment cooling, and open flue draughts. The Ventilation for a flueless gas hob or cooker is dependent on;

( ) The floor area in M2 and provision of an opening window and door
( ) The room volume and opening window (or similar) directly to the outside air
( ) The appliance gas consumption, M3 size of the room, and an opening window or door to the outside air

2.

The ventilation provision for a flueless water heater is dependent on

( ) The floor area in M2 and provision of an opening window and door
( ) The room volume and opening window (or similar) directly to the outside air
( ) The appliance gas consumption, room volume, and an opening window or similar to the outside air

3.

You attend a property where there is a gas hob installed in a small kitchen. The room has a window and door opening directly to outside air. The room is volume is 9m3, what size vent is required

( ) None Required
( ) 50cm2
( ) 100cm2

4.

Purpose provided ventilation for a flueless appliance must communicate directly with the outside air, whether directly or via a duct.

( ) True
( ) False

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5.

In the event that more than one gas appliance is installed in the same room area (air space), the method for calculating the ventilation would be

( ) to add all appliance vent requirements together
( ) to provide ventilation for the appliance which is likely to be operating and generating the greatest demand
( ) to provide ventilation for the greatest requirement of either; all open flue appliances, all flueless space heating appliances, or any other single requirement if greater
( ) to take the total demand of all appliance and remove 10%

6.

What are the flueless ventilation requirements for an 8kW net over sink Instantaneous water heater installed in the kitchen measuring 3 metres long, 3 metres wide and 2 metres from floor to ceiling

( ) Not Allowed
( ) Nil
( ) 50cm2
( ) 100cm2

7.

A 7kW (Gross) Natural Gas (G20) flueless space heater permanently fixed in the hallway providing 70W/m3 of space heating will require a permanent fixed vent direct to the outside of

( ) None Required
( ) 126.5cm2
( ) 144cm2
( ) 196cm2

8.

A flueless gas cooker is found in a room 18m3 which has no direct ventilation (window or door) to outside air. The floor area of this room is 9m2. It has an opening window and door which open into a conservatory with a floor area of 12m2. The conservatory then opens into the garden. The following is true;

( ) A permanent vent of at least 8000mm2 from the kitchen to the conservatory and a further 8000mm2 vent from the conservatory to outside. (this could be a vent above the openings) is required. The door between the Kitchen and Conservatory, and then conservatory to outside would each have to provide a free area of over 0.9M2 in their open position.
( ) So long as there is an opening window and door into the conservatory and then the conservatory to outside no additional ventilation is required. A permanent vent of at least 80cm2 from the kitchen to the conservatory and a further 80cm2 vent from the conservatory to outside is required. (this could be a vent above the openings) The door between the Kitchen and Conservatory, and then conservatory to outside would each have to provide a free area of over 1.05m2 in their open position.
( ) A permanent vent of at least 80cm2 from the kitchen to the conservatory and a further 80cm2 vent from the conservatory to outside is required. (this could be a vent above the openings) The door between the Kitchen and Conservatory, and then conservatory to outside would each have to provide a free area of over 1.05m2 in their open position.

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9.

Under what category of unsafe classification would you place a flueless gas cooker installed in a kitchen 7M3 with an opening window, but no opening door to outside, and no additional ventilation provision

( ) NCS
( ) AR
( ) ID
( ) IR (Immediately Reportable)

10.

Room sealed appliances draw their combustion air directly from the outside. However, where a room sealed appliance is installed in a cupboard, cloakroom, or compartment provision should be considered for keeping the appliance cool unless the manufacturer states otherwise. A 15kW net gas boiler installed in an under stairs cloakroom will require high and low vents of what size when vented via the hallway

( ) 40cm2 High 40cm2 Low
( ) 40cm2 High 80cm2 Low
( ) 75cm2 High 75cm2 Low
( ) 150cm2 High, 150cm2 Low

11.

A Room Sealed Boiler with Max Rated Gross Heat Input of 18Kw is installed in an old larder cupboard. The existing Plaster Vents to the outside provide 60cm2 free area, one high and the other low level. It is unlikely that they run right through the cavity and you are unable to see through to confirm. Are these vents sufficiently sized, and appropriate? Give your conclusions and recommendations

( ) Vents should be min 81cm2 High and 81cm2 Low, and preferably run across the cavity wall with an external sleeve to prevent blockage. Current Vents are AR
( ) Vents should be 163cm2 High and 163cm2 low for cooling and be sleeved across the cavity
( ) Vents should be 90cm2 High and Low to cool the compartment and be sleeved through the wall
( ) External vents should be blocked off and vents to the room of 180cm2 hi and low installed

12.

A DFE (Decorative Fuel Effect Fire) is installed in a living area utilising an existing chimney. The data plate announces a heat input of 6kw. The manufacturers' manual states ventilation should be installed to British Standards. What purpose provided size of ventilation is required for this appliance?

( ) No Additional Ventilation Required. Appliance is under 7KW
( ) The DFE will require 5cm2 per KW = 30cm2
( ) Unless the manufacturer states otherwise 100cm2

13.

2 x DFE's of rated het input 6.6kw net are installed in a through lounge diner. The manufacturers' manual states ventilation should be installed to British Standards. What purpose provided size of ventilation is required

( ) Nil
( ) 100cm2
( ) 200cm2
( ) 235cm2

14.

Open flue gas appliance ventilation considerations allow for the first 7kW of rated heat input of each appliance without the need for additional ventilation except when

( ) the appliance is installed in a compartment and vented direct to outside air or more than one open flue appliance is installed in the same air space / room
( ) there is also a flueless appliance in the same room / air space
( ) the room volume is less than 10m3
( ) the open flue appliance is a gas fire

15.

When calculating the combustion and compartment cooling ventilation requirements of an open flue appliance installed in a cupboard and vented direct to outside air, is it permissible to deduct the first 7kw in terms of adventitious air when calculating the ventilation requirements

( ) Yes
( ) No

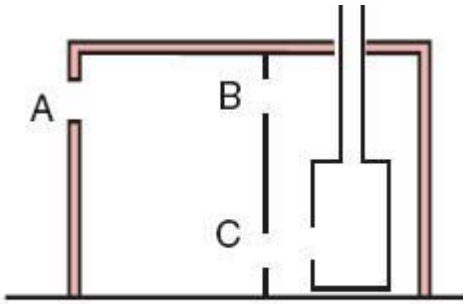
16.

An open flue gas boiler is installed in the Kitchen with a volume of 18m3 having a Gross rated maximum heat input of 16.5kW requires a permanent vent direct to the outside air of

( ) 47.5 cm2
( ) 50.0 cm2
( ) 40.0 cm2
( ) 42.75 cm2

17.

What size vents A, B, and C are required for the open flue natural draught appliance shown here, where the manufacturer states that the British Standards should be used. The appliance has a gross rated heat input of 18Kw. A is to the outside air. B and C are from the compartment to the room



Open Flue Boiler in Compartment

( ) Approximately A = 55cm2 B = 180cms C = 360cm2
( ) Approximately A = 360cm2 B = 360cm2 C = 720cm2
( ) Approximately A = 47cm2 B=164cm2 C=327cm2

18.

What is the purpose of having both High and Low levels vents installed in a compartment

( ) For complete combustion
( ) To prevent light back
( ) For keeping the compartment or cupboard cool

19.

In the case of an open flue appliance installed in a room or compartment, why is it so important that all the vents are communicating and taking air from the same source/room

( ) To balance the compartment or air space
( ) To maintain effective airflow
( ) To prevent cross ventilation
( ) To prevent the spread of fire

20.

An open flue gas boiler installed in a dining room. The vent path runs via the dining room door (Vent 3), through a second door from the hallway to the kitchen (Vent 2), then from the kitchen to the outside air (Vent 1). The Boiler has a max rated heat input of 19Kw net. What sizes should the vents be

( ) Vent 1 = 142.5cm2, Vent 2 = 142.5cm2, Vent 3 = 142.5cm2
( ) Vent 1 = 95cm2, Vent 2 = 142.5cm2, Vent 3 = 142.5cm2
( ) Vent 1 = 51cm2, Vent 2 = 77cm2, Vent 3 = 77cm2
( ) Vent 1 = 60cm2, Vent 2 = 90cm2, Vent 3 = 90cm2

21.

An open flue gas boiler installed in a dining room cupboard. The vent path runs from the compartment, into the dining room (Vent 4), from the dining room to the hall (Vent 3), the hall into the kitchen (Vent 2), then from the kitchen to the outside air (Vent 1). The Boiler has a max rated heat input of 24Kw net. What sizes should the vents be

( ) Vent 1 = 85cm2, Vent 2 = 127.5cm2, Vent 3 = 127.5cm2, Vent 4 = 240cm2 High and 480cm2 Low
( ) Vent 1 = 95cm2, Vent 2 = 142.5cm2, Vent 3 = 142.5cm2, Vent 4 = 95cm2 High and 190cm2 Low
( ) Vent 1 = 51cm2, Vent 2 = 77cm2, Vent 3 = 77cm2, vent 4 = 77cm2 High and 154cm2 Low
( ) Vent 1 = 60cm2, Vent 2 = 90cm2, Vent 3 = 90cm2, Vent 4 = 240cm2 High and 480cm2 Low

22.

What type of vents should be installed for the purpose of preventing the spread of smoke or fire

( ) Translucent
( ) Intumescent
( ) Circular
( ) Sleeved

23.

More often these days ventilation requirements are being presented in mm2 in preference to cm2. The effect of this is that a further 2 zeros are added to your conversion. I.e. 5cm2 per kW becomes 500mm2 per Kw. An open flue appliance of net heat input 12Kw in a room ventilated directly to the outside would require how much (mm2) permanent ventilation

( ) 25mm2
( ) 250mm2
( ) 2500mm2
( ) 6000mm2

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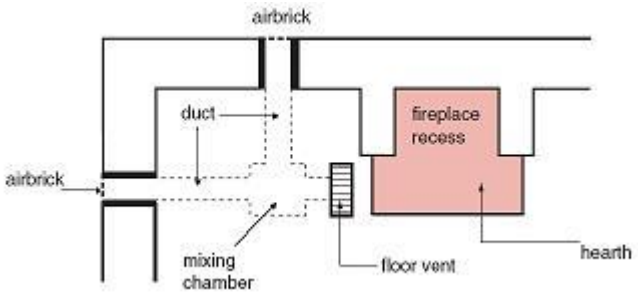
24.

Extraction fans can have an effect on the flue draught performance of an open flue appliance. Where an extraction fan is sited in the same room as a gas open flue natural draught appliance, generally the addition of a further ?cm2 ventilation would combat this. A flue flow test would then confirm this.

( ) 25cm2
( ) 50cm2
( ) 55cm2
( ) 100mm2

25.

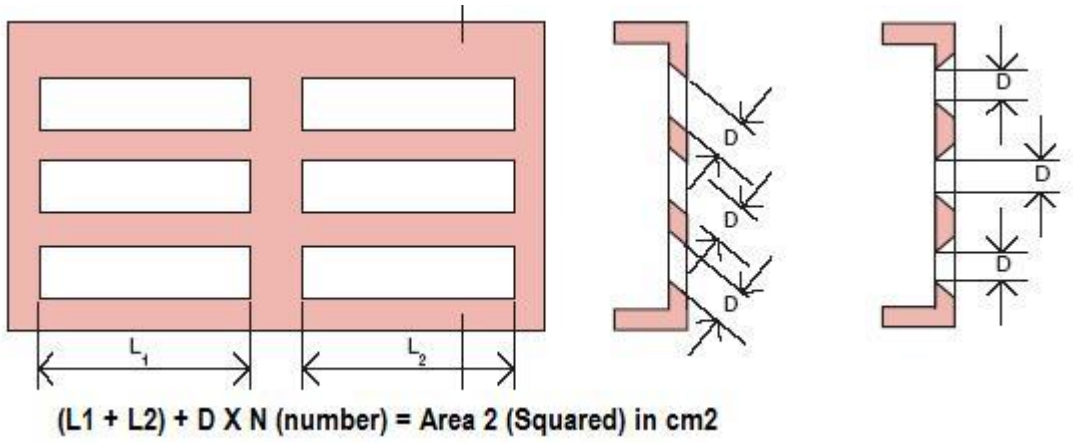
In the diagram, the permanent air is being provided by an under floor duct through airbricks in the outer wall. Assuming a Back Boiler with Fire Front Installation rated at 18Kw net (Back Boiler), and 6Kw net (Fire Front) what is the minimum size of any free area required through the air brick and duct



( ) 85mm2
( ) 8500cm2
( ) 8500mm3
( ) 85cm2

26.

A permanently open air vent shall be non-adjustable and be positioned where it is unlikely to become blocked. It shall be so installed that the building occupants are not provoked into sealing it against draughts or Noise. It should be sleeved across any cavity walls to prevent blockage. The actual size of free air opening can be measured as (L1 + L2 Length of apertures) X D (smallest part of opening) x N (number of openings upwards in this case 3) In this example assume that L1 is 6cm and L2 is 8cm, D is 0.75cm and give your answer.



( ) 31.50cm2
( ) 44.25cm2
( ) 48.00cm2
( ) 36.00cm2

27.

A room sealed natural draught (BF) boiler rated 11kW net max rated heat input installed in a compartment is found to have just a low level vent and is undersized. To rectify the ventilation issues the installer must add a High vent and upgrade the low level vent. What size should each vent be and how far vertically below and above the flue terminal

( ) 55cm2 Hi, 55cm2 Lo (Min 600mm above flue, 300mm below the flue terminal)
( ) 55cm2 Hi, 110cm2 Lo (Min 600mm above and below the flue terminal)
( ) 20cm2 High, 20cm2 Lo (1500mm above and 600mm below the flue terminal)
( ) 20cm2 High, 40cm2 Lo (Min 300mm above and 300mm below the flue terminal)

28.

In addition to combustion ventilation provision for an open flue boiler, consideration has to be given to the satisfactory provision of a flue draught in order to clear the products of combustion. What are the likely effects of inadequate ventilation

( ) Excess heat and danger of fire
( ) Vitiation leading to incomplete combustion
( ) Light back and sooting leading to incomplete combustion
( ) Flame chill and light back leading to carbon monoxide

29.

Passive stack ventilation can be used in the calculation of combustion air provision

( ) True
( ) False

30.

Should Passive Stack Ventilation be considered when undertaking a spillage test

( ) Yes, open and closed
( ) Yes, in the open position
( ) No, the passive stack supplies ventilation that benefits the test
( ) No, passive stack ventilation provides some of the appliance combustion air

31.

What effective ventilation area is provided by adventitious air

( ) 100cm2
( ) 80cm2
( ) 35cm2
( ) 40cm2

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1. Provision of Ventilation has to be considered in respect of gas appliances for the purpose of complete combustion, compartment cooling, and open flue draughts. The Ventilation for a flueless gas hob or cooker is dependent on;
Answer: The room volume and opening window (or similar) directly to the outside air

2. The ventilation provision for a flueless water heater is dependent on
Answer: The appliance gas consumption, room volume, and an opening window or similar to the outside air

3. You attend a property where there is a gas hob installed in a small kitchen. The room has a window and door opening directly to outside air. The room is volume is 9m3, what size vent is required
Answer: None Required

4. Purpose provided ventilation for a flueless appliance must communicate directly with the outside air, whether directly or via a duct.
Answer: True

5. In the event that more than one gas appliance is installed in the same room area (air space), the method for calculating the ventilation would be
Answer: to provide ventilation for the greatest requirement of either; all open flue appliances, all flueless space heating appliances, or any other single requirement if greater

6. What are the flueless ventilation requirements for an 8kW net over sink Instantaneous water heater installed in the kitchen measuring 3 metres long, 3 metres wide and 2 metres from floor to ceiling, and having an opening window direct to the outside air
Answer: 50cm2

7. A 7kW (Gross) Natural Gas (G20) flueless space heater permanently fixed in the hallway providing 70W/m3 of space heating will require a permanent fixed vent direct to the outside of
Answer: 126.5cm2
Explanation NOTE: The appliance is gross and must be converted to net before calculations

8. A flueless gas cooker is found in a room 18m3 which has no direct ventilation to outside The floor area of this room is 9m2. It has an openable window and door which open into a conservatory with a floor area of 12m2. The conservatory then opens into the garden. The following is true;
Answer: A permanent vent of at least 80cm2 from the kitchen to the conservatory and a further 80cm2 vent from the conservatory to outside is required. (this could be a vent above the openings) The door between the Kitchen and Conservatory, and then conservatory to outside would each have to provide a free area of over 1.05M2 in their open position.

9. Under what category of unsafe classification would you place a flueless gas cooker installed in a kitchen 7M3 with an opening window, but no opening door to outside, and no additional ventilation provision
Answer: AR

10. Room sealed appliances draw their combustion air directly from the outside. However, where a room sealed appliance is installed in a cupboard, cloakroom, or compartment provision should be considered for keeping the appliance cool unless the manufacturer states otherwise. A 15kW net gas boiler installed in an under stairs cloakroom will require high and low vents of what size when vented via the hallway
Answer: 150cm2 High, 150cm2 low

11. A Room Sealed Boiler with Max Rated Gross Heat Input of 18Kw is installed in an old larder cupboard. The existing Plaster Vents to the outside provide 60cm2 free area, one high and the other low level. It is unlikely that they run right through the cavity and you are unable to see through to confirm. Are these vents sufficiently sized, and appropriate? Give your conclusions and recommendations
Answer: Vents should be min 81cm2 High and 81cm2 Low, and preferably run across the cavity wall with an external sleeve to prevent blockage. Current Vents are AR

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12. A DFE (Decorative Fuel Effect Fire) is installed in a living area utilising an existing chimney. The data plate announces a heat input of 6kw. The manufacturers? manual states ventilation should be installed to British Standards. What purpose provided size of ventilation is required for this appliance?
Answer: Unless the manufacturer states otherwise 100cm2

13. 2 x DFE's 6.5 kw nett each are installed in a Through lounge diner, one in the dining area, the other in the lounge. The manufacturer's instructions state that where the appliance passes its flue flow and spillage test no additional ventilation will be required. On testing both appliances pass their flue performance tests. How much if any ventillation will be required
Answer: 30cm2
14. Open flue gas appliance ventilation considerations allow for the first 7kW of rated heat input of each appliance without the need for additional ventilation except when
Answer: the appliance is installed in a compartment and vented direct to outside air or more than one open flue appliance is installed in the same air space / room

15. When calculating the combustion and compartment cooling ventilation requirements of an open flue appliance installed in a cupboard and vented direct to outside air, is it permissible to deduct the first 7kw in terms of adventitious air when calculating the ventilation requirements
Answer: No

16. An open flue gas boiler is installed in the Kitchen with a volume of 18m3 having a Gross rated maximum heat input of 16.5kW requires a permanent vent direct to the outside air of
Answer: 40.0 cm2

17. What size vents A, B, and C are required for the open flue natural draught appliance shown here, where the manufacturer states that the British Standards should be used. The appliance has a gross rated heat input of 18Kw. A is to the outside air. B and C are from the compartment to the room
Answer: Approximately A = 47cm2 B = 164cm2 C = 327cm2

18. What is the purpose of having both High and Low levels vents installed in a compartment?
Answer: For keeping the compartment or cupboard cool

19. In the case of an open flue appliance installed in a room or compartment, why is it so important that all the vents are communicating and taking air from the same source/room
Answer: To prevent cross ventillation

20. An open flue gas boiler installed in a dining room. The vent path runs via the dining room door (Vent 3), through a second door from the hallway to the kitchen (Vent 2), then from the kitchen to the outside air (Vent 1). The Boiler has a max rated heat input of 19Kw net. What sizes should the vents be
Answer: Vent 1 = 60cm2 Vent 2 = 90cm2 Vent 3 = 90cm2

21. An open flue gas boiler installed in a dining room cupboard. The vent path runs from the compartment, into the dining room (Vent 4), from the dining room to the hall (Vent 3), the hall into the kitchen (Vent 2), then from the kitchen to the outside air (Vent 1). The Boiler has a max rated heat input of 24Kw net. What sizes should the vents be
Answer: Vent 1 = 85cm2 Vent 2 = 127.5cm2 Vent 3 = 127.5cm2 Vent 4 = 240cm2 High and 480cm2 Low

22. What type of vents should be installed for the purpose of preventing the spread of smoke or fire
Answer: Intumescent

23. More often these days ventilation requirements are being presented in mm2 in preference to cm2. The effect of this is that a further 2 zeros are added to your conversion. I.e. 5cm2 per kW becomes 500mm2 per Kw. An open flue appliance of net heat input 12Kw in a room ventilated directly to the outside would require how much (mm2) permanent ventilation
Answer: 2500mm2

24. Extraction fans can have an effect on the flue draught performance of an open flue appliance. Where an extraction fan is sited in the same room as a gas open flue natural draught appliance, generally the addition of a further ?cm2 ventilation would combat this. A flue flow test would then confirm this.
Answer: 50cm2

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25. In the diagram, the permanent air is being provided by an under floor duct through airbricks in the outer wall. Assuming a Back Boiler with Fire Front Installation rated at 18Kw net (Back Boiler), and 6Kw net (Fire Front) what is the minimum size of any free area required through the air brick and duct
Answer: 85cm2

26. A permanently open air vent shall be non-adjustable and be positioned where it is unlikely to become blocked. It shall be so installed that the building occupants are not provoked into sealing it against draughts or Noise. It should be sleeved across any cavity walls to prevent blockage. The actual size of free air opening can be measured as (L1 + L2 Length of apertures) X D (smallest part of opening) x N (number of openings upwards in this case 3) In this example assume that L1 is 6cm and L2 is 8cm, D is 0.75cm and give your answer.
Answer: 31.50cm2

27. A room sealed natural draught (BF) boiler rated 11kW net max rated heat input installed in a compartment is found to have just a low level vent and is undersized. To rectify the ventilation issues the installer must add a High vent and upgrade the low level vent. What size should each vent be and how far vertically below and above the flue terminal
Answer: 55cm2 Hi, 55cm2 Lo (Min 600mm above flue, 300mm below the flue terminal)
Explanation You will have to refer to your chimney/flue standards also for terminal position. Room sealed terminal positions

28. In addition to combustion ventilation provision for an open flue boiler, consideration has to be given to the satisfactory provision of a flue draught in order to clear the products of combustion. What are the likely effects of inadequate ventilation
Answer: Vitiation leading to incomplete combustion

29. Passive stack ventilation can be used in the calculation of combustion air provision
Answer: No

30. Should Passive Stack Ventilation be considered when undertaking a spillage test
Answer: Yes, open and closed

31. What effective ventilation area is provided by adventitious air
Answer: 35cm2

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