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FloPlast Air Admittance Valves

(Issue 2 02/2018)

This document relates to FloPlast's AF32, AFE32, AF110, AVE100, AV110 and AX110 valves, for use in above-ground drainage systems and in conjunction with the Building Regulations, (PART H1).

FloPlast's Air Admittance Valves carry the British Standards Kitemark (KM512474) and CE mark, as having met the performance requirements of BS EN 12380: 2002 and have been designated with an A1 rating.

FloPlast's Air Admittance Valves provide a means of ventilation to the drainage system to prevent loss of water seals in traps and consequent release of foul air into the building.

The drainage system and the installation and use of FloPlast's Air Admittance Valves must be in accordance with the Design Data and Installation sections of this document.



AF32



AVE100/AV110



AF110



AX110



Regulations

FloPlast's Air Admittance Valve, if installed, used and maintained in accordance with this document and supporting installation guides, can contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: H1

Comment:

Foul Water Drainage

The valves will:

1. Provide adequate ventilation to prevent the loss of water seals in trapped appliances. See section 4, 6 and 7 of this document.
2. Prevent foul air from entering the building. See section 7 of this document.
3. Enable access to sanitary pipework for clearing blockages. See section 6.1 of this document.
4. Contribute to the ventilation of underground drains. See section 6.2 and 6.3 of this document.

Regulation: 7

Comment:

Material and workmanship

The products are acceptable. See section 9 and the installation part of this document.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)

Comment:

Durability, workmanship and fitness of materials

The use of this product satisfies the requirements of this Regulation. See section and the installation part of this document.

Regulation: 9

Standard: 3.7

Comment:

Building standards applicable to construction

Wastewater drainage

The valves can meet the relevant requirements of this Standard, with reference to clauses 3.7.7⁽²⁾ and 3.7.1⁽¹⁾. See sections 4, 6.1 to 6.4, 6.6 to 6.9 and 7 of this document.

Standard: 7.1[a](b)

Comment:

Statement of durability

This product can contribute to meeting the relevant Requirements of Regulation 9, standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this standard.

Regulation: 12

Comment:

Building Standards applicable to conversions

All comments given for product Regulation 9, Standards 1 to 6 also apply to this Regulation with reference to 0.12.1⁽¹⁾⁽²⁾ and schedule 6⁽¹⁾⁽²⁾.



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation: 23 (a)(i)(iii)(b)(i) Fitness of materials and workmanship

Comment:

The products are acceptable. See section 9 and the installation part of this document.

Material and workmanship

The products are acceptable. See section 9 and the installation part of this document.

Regulation: 79

Comment:

Drainage Systems

The products provide adequate ventilation to maintain water seals in traps. See sections 4, 6.1 to 6.4, 6.6 to 6.9 and 7 of this document.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this document may assist the client, designer (including Principle Designers) and contractors (including Principle Contractor) to address their obligations under the regulations.

Additional Information

CE Marking

FloPlast has taken the responsibility of CE marking the products in accordance with harmonised European standard BS EN 12380: 2002 and data is given in FloPlast's Declaration of Performance as applicable to the range.

1.0 Technical Specification

1.1 AF32/AFE32: The AF32 and AFE32 have been designed for installation directly onto 32mm UK designated Solvent Waste Pipe. with the use of the universal adaptor (provided with the product), the AF32 can also be installed onto 40mm and 50mm UK designated pipe. The valve is also available designated as AFE32, which has been designed for use with European designated 32mm/40mm and 50mm Solvent Waste Pipe.

FloPlast's AF32 Air Admittance Valve, (as seen on the front cover) comprises of an injection-moulded, two-part acrylonitrile butadiene styrene (ABS) body, screwed together incorporating an EPDM sealing ring. The valve incorporates a sliding ABS injection moulded disc and EPDM (ethylene propylene diene monomer) seal (poppet), this acts as the opening and closing seal.

1.2 AV110/AVE100: The AV110 has been designed for installation directly onto 110mm UK designated pipe. The AVE100 has been designed for use with European designated 100mm Pipe.

FloPlast's AVE100/AV110 Air Admittance Valve, (as seen on the front cover) comprises an injection-moulded, two-part poly vinyl-chloride (PVC-U) body, screwed together incorporating an EPDM sealing ring. The valve incorporates a sliding ABS injection moulded disc and EPDM sealing ring (poppet) which acts as the opening and closing seal.

1.3 AF110: The AF110 has been designed for installation directly into 110mm UK designated pipe with the use of and EPDM finned seal. Additionally the AF110 can be installed solvent welded directly onto 82mm UK designated pipe by removing the finned seal and using the socket on the body. The valve can also be installed directly into 100mm or 110mm European designated pipe with the use of an EPDM finned seal, this product is designated AFE110.

FloPlast's AF110 Air Admittance Valve, (as seen on the front cover) comprises of an injection-moulded, two-part poly vinyl-chloride (PVC-U) body, screwed together incorporating an EPDM sealing ring. The valve incorporates a sliding ABS injection moulded disc and EPDM seal (poppet) which acts as the opening and closing seal.

1.4 AX110: The AX110 incorporates the same features as the AF110, with the exception of the inclusion of an insect/debris grill manufactured from Polypropylene.

Document H of the Building Regulations Clause 1.33 states that AAV's should not be used externally or in dust laden atmospheres, however due to the design criteria requirements of the termination of SVP's within 3 metres of an opening window, and the use of the roof as habital space and also the upturn in loft/roof area conversions, and as a means of overcoming unsightly SVP installations, Building Control Officers are accepting their use.

FloPlast strongly advise that confirmation of acceptance of the use of the AX110 is gained from Building Control prior to installation.

1.5 These valves incorporate spigots detailed in Table 1. They incorporate a finned seal for installation into 110mm and 100mm pipes or ABS and PVC-U solvent sockets.

1.6 The valves incorporate spigots with diameters that are in accordance with the standards for waste pipe, including: BS EN 1329-1, BS EN 1455-1, BS EN 1565-1, BS EN 1566-1, BS4514 and BS5255.

1.7 Continuous quality control is exercised during the manufacture and assembly, including visual checks, checks on dimensional accuracy and 100% functional testing of each product. The raw materials and bought-in goods are subject to quality controls as defined within our ISO9001 Quality Management System (FM 501414).

1.8 FloPlast AAV's are designated A1 in accordance with BS EN 12380: 2002 and can be fitted below the flood level of connected appliances, in air temperatures between -20°C and 60°C.

Figure 1 FloPlast Air Admittance Valve Design (Shape of lid is different on the AF32 & AFE32)

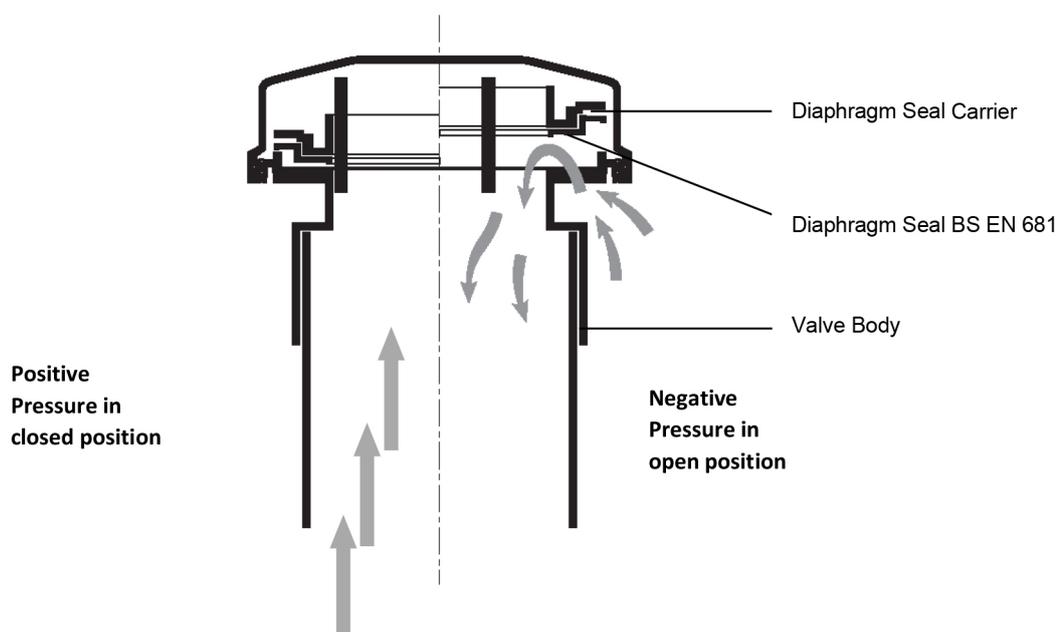


Table 1 Waste Pipe dimensions for use with FloPlast Seals

 UK designated sizes					
Valve	Nominal Size (mm)	Nominal Mean OD(mm)	Maximum Mean OD(mm)	Corresponding References	Pipe Material
AF32 (Solvent Weld)	32	36.1	36.5	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AF32 (With Adaptor)	40	42.7	43.1	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AF32 (With Adaptor)	50	55.7	56.1	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AF110/AX110 (Solvent Welded Into socket)	82	82.0	82.3	BS EN1329-1 (BS 4514)	PVC
AF110/AX110 (Push-Fit)	110	110.0	110.3	BS EN 1329-1 BS EN 1455-1, BS EN 1565-1, BS EN 1566-1, BS 4514, (BS5255)	Multi
AV110 (Solvent Weld)	110	110.0	110.3	BS EN1329-1 (BS 4514)	PVC

 European designated size					
Valve	Nominal Size (mm)	Nominal Mean OD(mm)	Maximum Mean OD(mm)	Corresponding References	Pipe Material
AFE32 (Solvent Weld)	32	32.0	32.3	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AFE32 (With Adaptor)	40	40.0	40.3	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AFE32 (With Adaptor)	50	50.0	50.3	BS EN 1455-1, BS EN 1565-1, BS EN 1566-1 (BS 5255)	ABS / PVC
AVE110 (Solvent Weld)	100	100.0	100.3	BS EN1329-1	PVC

A1 = permitted to be used below flood level in locations where the temperature is in the range of -20°C to 60°C

2.0 Manufacture

2.1 The materials used to manufacture the piece parts in FloPlasts AAV's are defined in section 1 above and in the main use conventional injection moulding techniques. The EPDM poppet seal and the 'O' rings used to seal the lids are purchased from rubber manufacturing specialists and are assembled on the poppets and bodies respectively.

2.2 As a part of the assessment and ongoing surveillance of product quality under FloPlast's Kitemark accreditation (KM51247), BSI has:

- Agreed with FloPlast the quality control procedures and product testing to be undertaken.
- Assessed and agreed the quality control operated over batches of incoming materials.
- Monitored the production process and verified that it is in accordance with the documented process.
- Evaluated the process for manufacturing non-conformities.
- Checked that all equipment has been properly tested and calibrated.

Undertaken to carry out the above measures as a part of the surveillance process to verify that the specifications and quality control being operated by FloPlast are being maintained.

2.3 The management systems of FloPlast have been assessed and certified as meeting the requirements of BS EN ISO 9001: 2015 by British Standards Institute (Certificate KF501414).

3.0 Delivery and site handling

3.1 FloPlast AAV's, complete with their adaptors, (where applicable), along with installation instructions are supplied in cardboard boxes and polyethylene bags, to limit the risk of contamination or damage. All valves must be stored upright in their boxes until required for use.

3.2 The legend of the distributor is incorporated in to the lid of the product and is shown on the packaging. In addition, all FloPlast valves have CE mark designation A1 to BS EN 12380: 2002, the details of which appear on the boxes.

4.0 Design Consideration - General



4.1 The FloPlast Air Admittance Valves when used in above-ground drainage systems designed with BS 12056-1: 2000 and BS 12056-2: 2000, the valves are satisfactory for use to:

- admit air under conditions of reduced pressure in the discharge pipes and prevent water seals in traps from being drawn or evacuated
- prevent the release of foul air from the drainage system, and
- contribute to the ventilation of the main drain to which the discharge stack incorporating the valve is connected

4.2 The 32mm and 40mm valves are designed for connection to waste pipes to prevent water loss from trap seals by self and induced siphonage arising from water flow in small diameter branch discharge pipes.

4.3 The 50mm valve is for use on branch discharge pipes.

4.4 The 82mm, 100mm and 110mm valves are designed for use on discharge stacks up to 45 metres or 10 storeys high.

4.5 The FloPlast valves are designed for use in association with each other or separately.

5.0 Practicability of installation

FloPlasts AAV's are designed to be installed by a competent general builder, or a contractor experienced in these types of products.

6.0 Drainage System Design



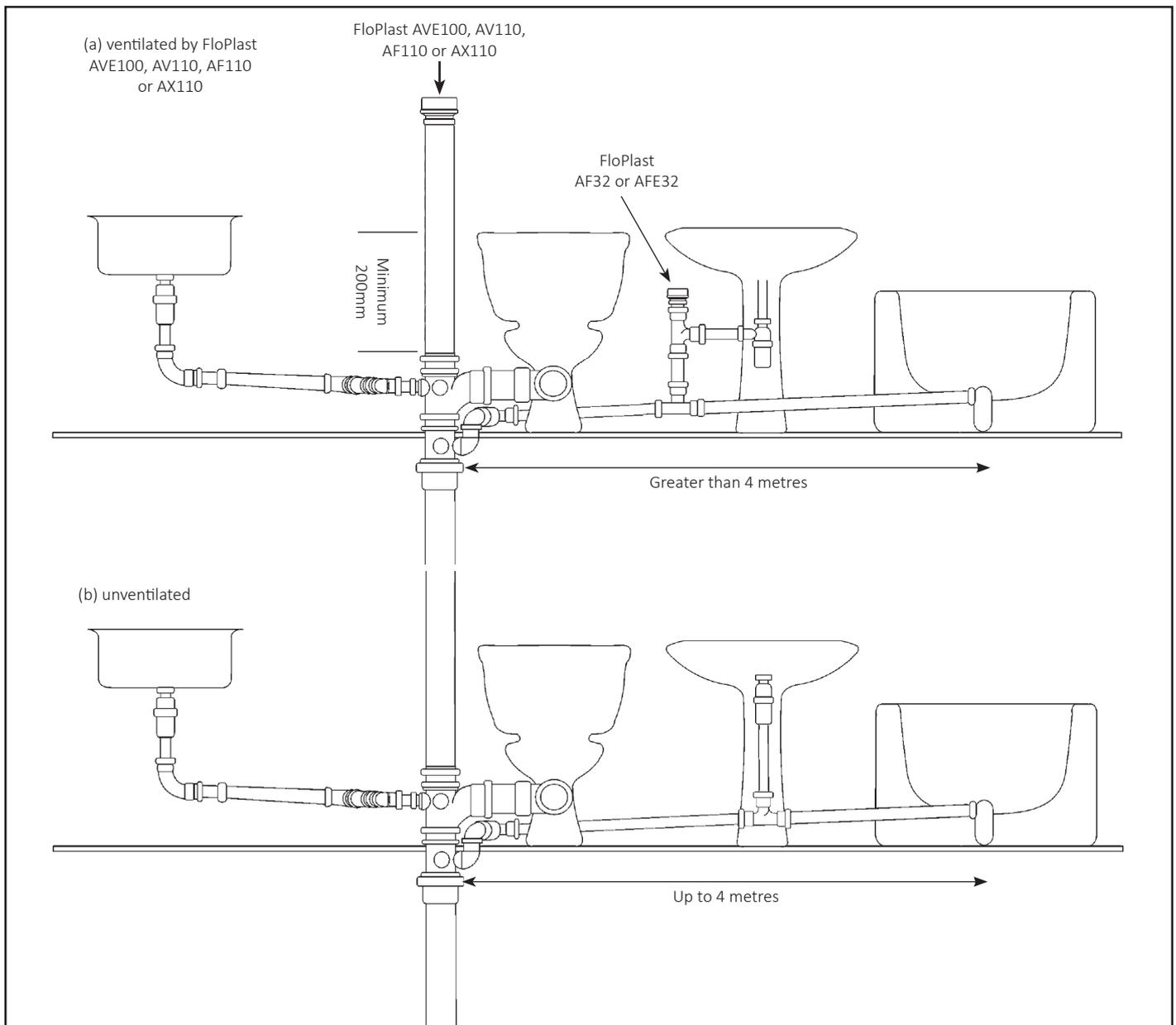
6.1 Drainage systems designed in accordance with BS EN 12056-1: 2000 and BS EN 12056-2:2000 should be based on the airflow data given in Table 2. Typical installation details in accordance with BS EN 12056-1: 2000 are given in Figures 3 and 4.

Table 2 Airflow Performance (litres per sec)

Nominal size of pipe	Airflow
32mm	10.1
82mm/110mm	43.0

Note: These results are based on tests carried out by the United Kingdom Building Research Establishment (BRE) in accordance with BS EN 12380: 2002

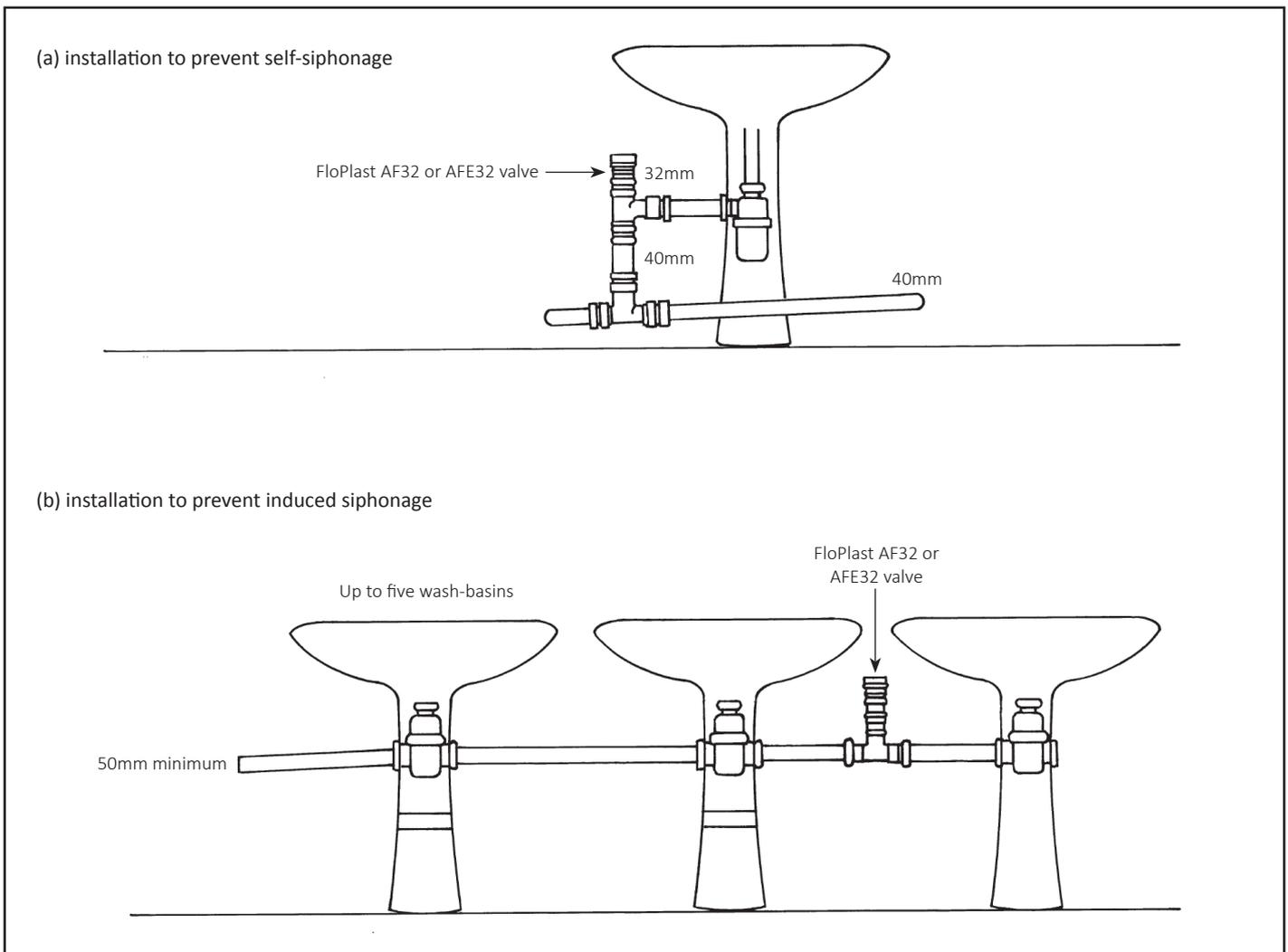
Figure 3 Valves installed in domestic dwellings



NOTES:

- The maximum distance of appliance traps from the discharge stack must be in accordance with BS EN 12056-2: 2000 paragraph 6.4.3 Table 10 and Figure 9 Ventilated Branches. The separate ventilation shown on the BS figures may be provided by a FloPlast AF32 or AFE32 Air Admittance Valve which must be within 1.5 metres of the appliance trap.
- Unventilated branches BS EN 12056-2: 2000 paragraph 6.4.11, Table 5 and Figure 6.
- Ventilation stacks higher than 45 metres or 10 storeys must not be fitted with the FloPlast AVE100/AV110, AF110 or AX110 Air Admittance Valve

Figure 4 Installation

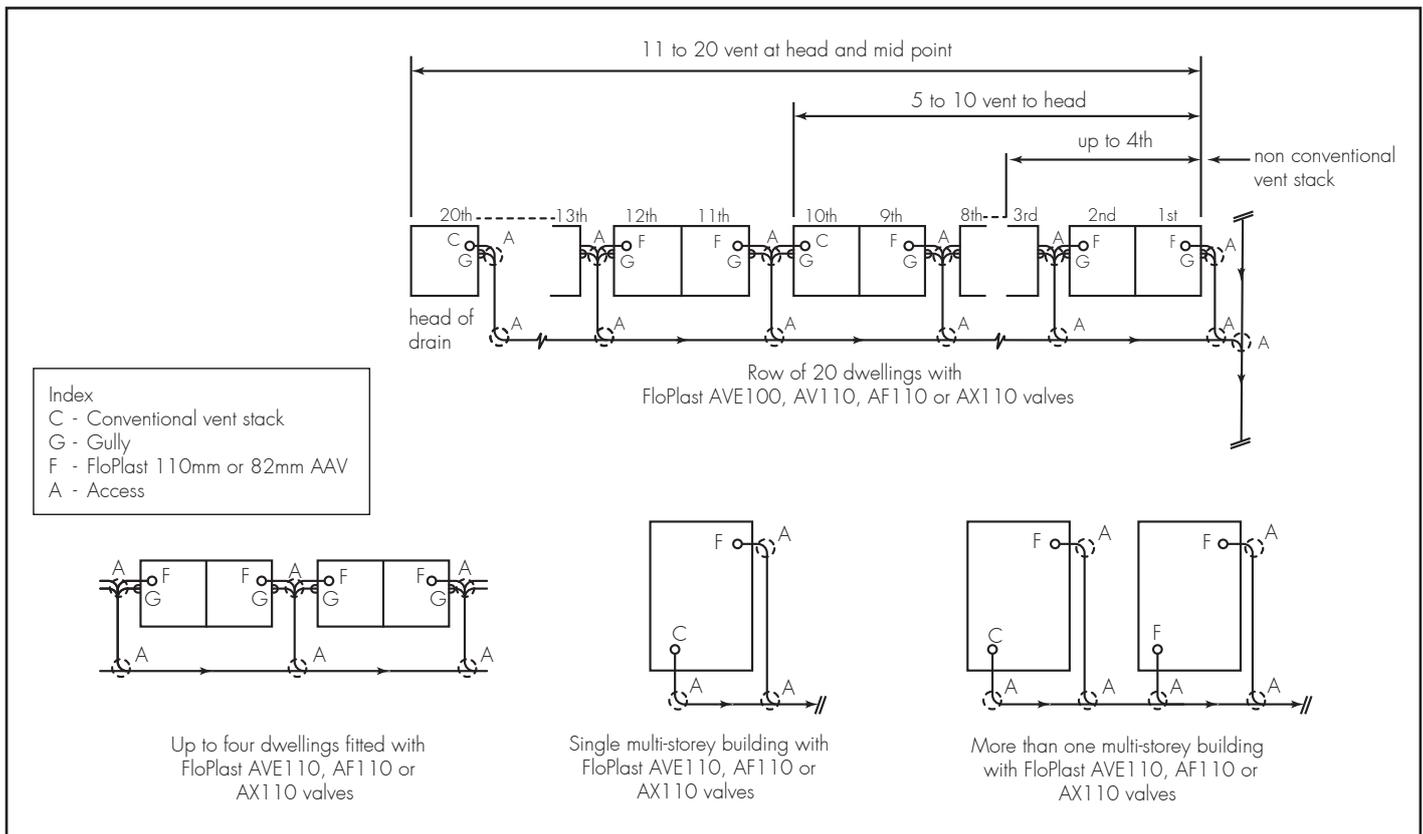


6.2 To contribute to the ventilation of the underground drain and to minimise the effects of excessive back pressures when a drain blockage occurs, the branch or main drain serving a stack or stacks fitted with a FloPlast valve may require a venting point upstream of the stack connection. Guidance is given in Table 3 and Figure 5.

Table 3 Air admittance valve disposition

Number of Dwellings	Up to three stories in height	Multi-storey domestic dwelling and non-domestic buildings
1 – 4	Additional drain and venting not required	Conventional drain venting to be provided if more than one such building, each equipped with the valves, is connected to a common drain which is not itself vented by means of a ventilation stack or discharge stack not fitted with a valve.
5 – 10	Conventional ventilation (open-topped discharge stack) to be provided at the vent stack at the head of the installation.	
11 – 20	Conventional ventilation (open-topped or discharge stack) to be provided at the vent stack at the head of the installation and at mid-point of the system.	

Figure 5 Examples of drain ventilation provisions



6.3 To prevent self-siphonage a connection to the AF32 or AFE32 valve is required within 1500mm of the trap (see Figure 4).



6.4 To prevent induced siphonage in a row of wash-basins, a AF32 or AFE32 valve can be fitted between the two wash-basins furthest from the discharge stack (see Figure 4).

6.5 Air admittance valves should not be used as the only ventilation to septic tanks or cesspools.



6.6 The valve should be installed within the building where it is easily accessible but not subject to interference from vandals.

6.7 If the valve is to be installed in, or in close proximity to, an habitable space where noise of operation may cause a nuisance, then consideration must be given to the use of a suitable form of sound insulation.

6.8 In addition, other than those shown in Figure 5, stacks should not be fitted with the valves when the connecting drain(s) are subject to periodic surcharging or are fitted with intercepting traps. An open-topped discharge stack or ventilating stack should be used in such cases.

7.0 Effect on water seals



7.1 The valves will admit sufficient quantities of air into the stack when they are subjected to a reduced pressure and thereby prevent loss of the water seals in appliance traps.

7.2 Under conditions of increased pressure in the drainage system, each valve will remain closed, thereby preventing the release of foul air into the building.

7.3 A pressure increase sufficient to raise the level in the water seal or to cause foul air to bubble up through the seal is an indication that a drain blockage has occurred or that the system is being overloaded or otherwise misused.

8.0 Maintenance

8.1 FloPlast valves do not normally require maintenance.

8.2 In the event of accidental damage or vandalism the valves must be renewed.

9.0 Durability



FloPlast valves are manufactured from materials conventional in drainage systems. Repeated opening and closing will not adversely affect the sealing or operation of the valve. When used in the context of this data sheet the valves will not be subject to significant deterioration and will have a life equivalent to that of the drainage system in which it is installed.

10.0 Re-use and recyclability

The product contains PVCu, ABS, EPDM rubber and synthetic rubber, which can be recycled.

11.0 Installation

11.1 Installation must be carried out in accordance with these instructions.

11.2 FloPlast AF110 & AX110 valves are supplied with a synthetic rubber connector enabling a push-fit into 100mm and 110mm as indicated in Table 1. Additionally if the rubber connector is removed from the valve a solvent cement socket will be revealed enabling connection to 82mm pipes as indicated in Table 1.

11.3 FloPlast AVE100 and AV110 are supplied with solvent cement sockets enabling a solvent cement connection to pipes AS INDICATED IN Table 1.

11.4 FloPlast AF32 & AFE32 valves are available in both UK and European designated sizes, supplied with a solvent weld socket on the main body for 32mm with an adaptor enabling the product to be connected to solvent welded pipe as indicated in Table 1.

11.5 FloPlast AVE100, AV110, AF110 and AX110 valves must be fitted in a vertical position 200 mm above the highest branch connection (see Figure 3). As FloPlast valves are A1 designated to BS EN 12380-1: 2002 it is possible to locate them below the lowest reservoir being vented.

11.6 FloPlast AF32 and AFE32 valves must be fitted in a vertical position at least 100mm above the pipe being vented. As FloPlast valves are A1 designated to BS EN 12380-1: 2002 it is possible to locate them below the lowest reservoir being vented.

11.7 The valves are easily installed in discharge and/or ventilation pipes and eliminate the need to penetrate the roof covering. Care should be taken to avoid contamination of the sealing surfaces, as this may affect airtightness.

12.0 Technical Investigation – Tests

12.1 Tests were carried out and the results assessed against BS EN 12380: 2002 to determine:

- impact resistance (drop test)
- airtightness after endurance at negative temperature
- airtightness before and after endurance at positive temperature
- opening pressure
- airflow capacity

13.0 Technical Investigation

13.1 The manufacturing process applied to these products are controlled with FloPlast BS EN ISO 9001: 2015 Quality Management System (Certificate No. FM501414). These processes are regularly audited by representatives of BSI to ensure continued compliance with our detailed processes.

13.2 FloPlast's valves are subject to type testing and audit test as determine with the Kitemark scheme to which they are certified, (Certificate KM512474). Testing is undertaken on behalf of BSI at the Building Research Establishment also known as BRE.

14.0 Bibliography

BS 4514 : 2001 Unplasticized PVC soil and ventilating pipes of 82.4 mm minimum mean, outside diameter and fittings and accessories of 82.4 mm and of other sizes — specification

BS 5255: 1989 Specification for thermoplastics waste pipe and fittings

BS EN 1329-1: 2014 Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Unplasticized poly(vinyl chloride) (PVC-U)

BS EN 1455-1: 2000 Plastics piping systems for soil and waste (low and high temperature) within the building structure. Acrylonitrile-butadiene-styrene (ABS). Specifications for pipes, fittings and the system

BS EN 1565-1; 2000 Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Styrene copolymer blends (SAN + PVC) — Specifications for pipes, fittings and the system

BS EN 1566-1 : 2000 Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Chlorinated poly(vinyl chloride) (PVC-C) — Specification for pipes, fittings and the system

BS EN 12056-1 : 2000 Gravity drainage systems inside buildings — General and performance requirements

BS EN 12056-2 : 2000 Gravity drainage systems inside buildings — Sanitary pipework, layout and calculation

BS EN 12380: 2002 Air admittance valves for drainage systems — Requirements, test methods and evaluation of conformity

BS EN ISO 9001 : 2015 Quality management systems — Requirements

15.0 Conditions

15.1 This document:

- a. Relates only to the product that is named, described, installed, used and maintained as set out in this document;
- b. Is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this document;
- c. Is valid only within the UK;
- d. Has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- e. Is subject to English law.

15.2 References in this Certificate to any Act of Parliament, Regulation made there under, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this document.

15.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- a. Are maintained at or above the levels which have been assessed and found to be satisfactory by the BSI;
- b. Continue to be checked as and when deemed appropriate by the BSI under arrangements that it will determine; and
- c. Are reviewed by the BSI as and when it considers appropriate.

15.4 In issuing this document, FloPlast is not responsible for:

- a. the right of the document holder to market, supply, install or maintain the product; and
- b. the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this document are the minimum standards required to be met when the product is used. They do not support in any way to restate the requirements of the Health & Safety at Work Act 1974, or of any other statutory, common law or other duty which may exist at the date of this document or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care.

In developing this document, FloPlast does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.

In demonstrating their compliance with BS EN 12380; 2002 FloPlast's Air Admittance Valves are fit for their intended use provided they are installed, used and maintained as set out in this document, the British Kitemark Certificate KM512474 has been awarded to FloPlast.