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Agrément Certificate

09/4650

Product Sheet 1

POLYPIPE POLYVALVE AIR ADMITTANCE VALVES

POLYPIPE POLYVALVE 110 MM, 82 MM, 50 MM, 40 MM AND 32 MM AIR ADMITTANCE VALVES

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate replaces Certificate 89/2235 and relates to Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves to BS EN 12380 : 2002, Class A1, for the above-ground drainage systems described in this Certificate.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Drainage system design — the valves are for above-ground drainage systems and meet the performance requirements of BS EN 12380 : 2002 (see section 5).

Effect on water seals — the valves provide a means of ventilation to the drainage system to prevent the loss of water seals (see section 6).

Durability — the valves will have a life equivalent to that of the drainage system in which they are installed (see section 8).



The BBA has awarded this Agrément Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Brian Chamberlain

Greg Cooper

Date of First issue: 6 April 2009

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	H1	Foul water drainage
Comment:		The valves will: • provide adequate ventilation to prevent the loss of water seals in trapped appliances. See sections 3.1 to 3.4, 5.1 to 5.9, 6.1 and 6.2 of this Certificate. • prevent foul air from entering the building. See section 6.1 of this Certificate. • enable access to the sanitary pipework for clearing blockages. See section 5.2 of this Certificate. • contribute to the ventilation of underground drains. See sections 5.2 and 5.3 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The valves are acceptable. See section 8 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The valves can contribute to a construction satisfying this Regulation. See sections 7 and 8 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building Standards – construction
Standard:	3.7(b)(c)	Wastewater drainage
Comment:		Sanitary pipework incorporating the valves can satisfy the Requirements of this Standard, with reference to clauses 3.7.1 ⁽¹⁾⁽²⁾ , 3.7.7 ⁽²⁾ and 3.7.8 ⁽¹⁾ . See sections 3.1 to 3.4, 5.1 to 5.9, 6.1 and 6.2 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The valves are acceptable. See section 8 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The valves are acceptable. See section 7 of this Certificate.
Regulation:	N2	Drainage systems
Comment:		The valves provide adequate ventilation to prevent the destruction of the water seals in traps. See sections 3.1 to 3.4, 5.1 to 5.9, 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

In the opinion of the BBA, there is no information in this Certificate which relates to the obligations of the client, CDM co-ordinator, designer and contractors under these Regulations.

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.1 *Internal services*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual*, Section *Services*, Sub-section *Ventilation*.

General

This Certificate relates to Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves to BS EN 12380 : 2002, Class A1, for use in above-ground drainage systems designed in accordance with this Certificate and which have met the performance requirement of BS EN 12380 : 2002, Class A1.

The valves provide a means of ventilation to the drainage system to prevent the loss of water seals in traps and consequent release of foul air into the building.

The drainage systems and the installation and use of the valves must be in accordance with the conditions set out in the *Design Considerations* and *Installation* parts of this Certificate.

Technical Specification

1 Description

1.1 The Polyvalve 110 mm and 82 mm air admittance valves (see Figure 1) are designed to be solvent welded to 110 mm or 82 mm diameter soil pipes to BS EN 1329-1 : 2000 and BS 4514 : 2001 and are supplied in expanded polystyrene insulating containers, the top parts of which may be used to help prevent condensation forming within the valves under cold conditions. An adaptor (SWE99) is available to clip onto the 110 mm Polyvalve converting it to a push-fit connector as an alternative to solvent welding. The valves comprise:

Unplasticised polyvinyl chloride (PVC-U)⁽¹⁾

- valve body
- valve cap
- diaphragm seal carrier
- reducer (for 82 mm valve).

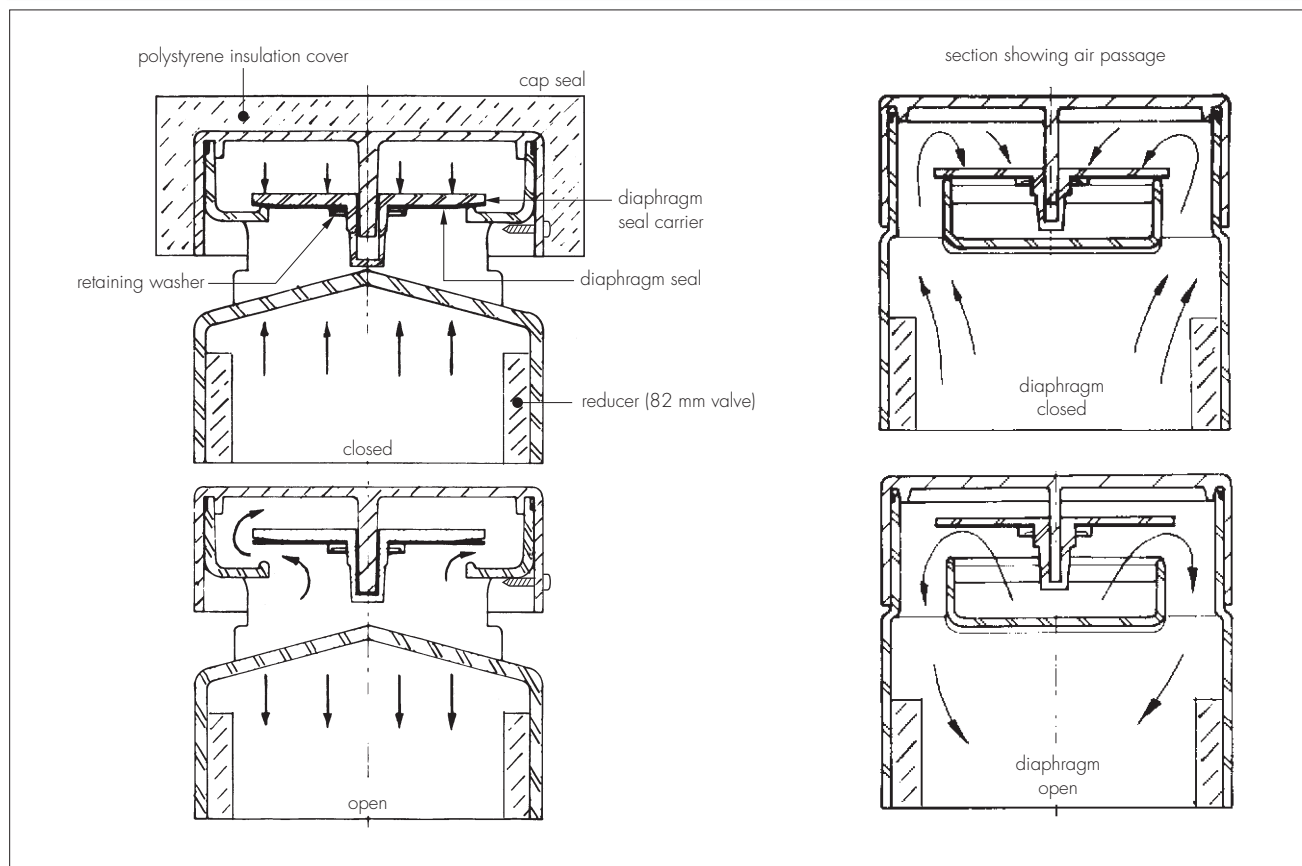
Rubber

- diaphragm seal⁽²⁾
- cap seal⁽²⁾.

Polypropylene

- retaining washer.

Figure 1 Polyvalve 82 mm air admittance valve



1.2 Polyvalve 50 mm, 40 mm and 32 mm air admittance valves (see Figure 2) are available with alternative styles of body to enable jointing to be carried out by push-fit jointing into polypropylene sockets to BS EN 1451 : 2000 and solvent welding to sockets of ABS/PVC-MU⁽¹⁾ to BS EN 1455-1 : 2000 and BS EN 1329-1 : 2000. The valves comprise:

Acrylonitrile-butadiene-styrene (ABS)⁽¹⁾

- valve body
- valve cap
- diaphragm seal carrier.

Rubber

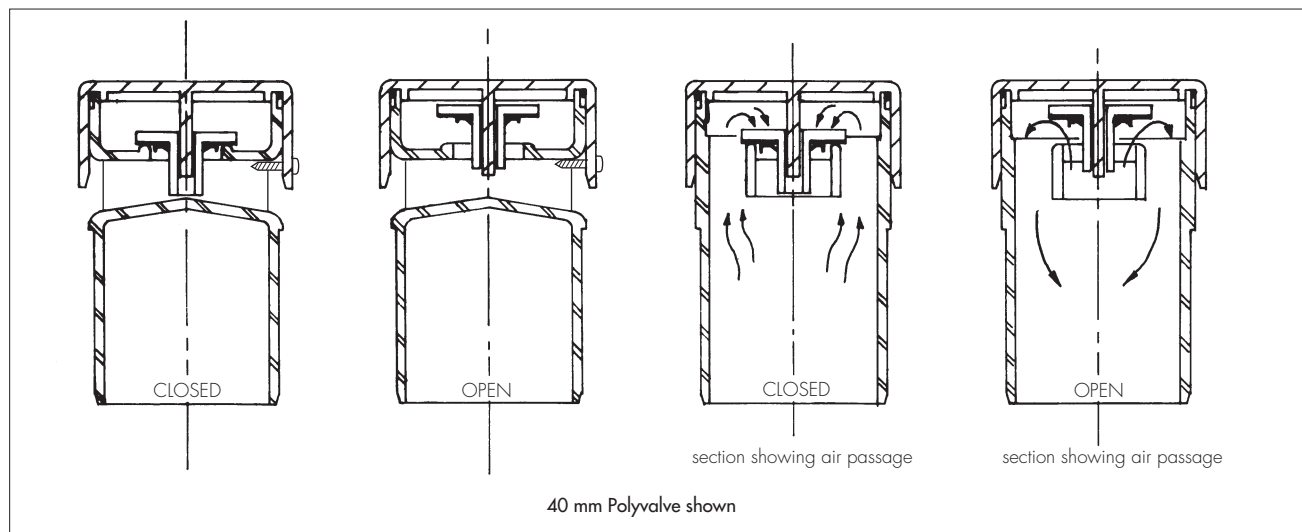
- diaphragm seal⁽²⁾
- cap seal⁽²⁾.

Polypropylene

- retaining washer.

- (1) The ABS and PVC-U components are manufactured by injection moulding. PVC-MU is modified PVC-U.
- (2) The rubber diaphragm and the cap seal are bought-in components. A Certificate of Conformity is provided by each supplier confirming that the goods supplied are to the agreed specification.

Figure 2 Polyvalve 50 mm, 40 mm and 32 mm air admittance valve



1.3 The full product range is detailed in Table 1.

Table 1 Product range

Valve size (mm)	BS EN 12380 designation ⁽¹⁾	Use
32	A1	See section 3.3
40	A1	See section 3.3
50	A1	See section 3.3
82	A1	See section 3.2
110	A1	See section 3.2

(1) A1 = the valves are permitted to be used below flood level in locations where the temperature is within the range of -20°C to 60°C.

1.4 The valves are designed to fit waste pipes in accordance with the appropriate Standards including: BS EN 1329-1 : 2000, BS EN 1451-1 : 2000, BS EN 1455-1 : 2000, BS EN 1519-1 : 2000, BS EN 1565-1 : 2000, BS EN 1566-1 : 2000 and BS 4514 : 2001.

1.5 Continuous quality control is carried out during manufacture and assembly to include visual and dimensional checks. Every valve is air tested to a pressure of 40 mm water gauge.

2 Delivery and site handling

2.1 The 110 mm and 82 mm valves are packaged in expanded polystyrene containers. The manufacturer's legend and the BBA logo are moulded onto each valve cap.

2.2 The 50 mm, 40 mm and 32 mm valves (see Figure 2) are individually packed in clear polythene bags. The manufacturer's legend/code number is marked on the body of the valve, and the size of the valve is moulded onto each valve cap.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Polypipe Polyvalve 110 mm, 82 mm, 50 mm, 40 mm and 32 mm Air Admittance Valves.

Design Considerations

3 General



3.1 When used in accordance with the provisions of this Certificate in above-ground drainage systems designed in accordance with BS 12056-1 : 2000 and BS 12056-2 : 2000, the valves:

- admit air under conditions of reduced pressure in the discharge pipes and prevent water seals in traps from being drawn,
- 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.

3.2 The 110 mm and 82 mm valves are for use on soil stacks serving buildings up to five storeys high.

3.3 The 50 mm, 40 mm and 32 mm valves are for use on branch discharge pipes.

3.4 The valves can be used in association with each other or separately.

4 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

5 Drainage system design

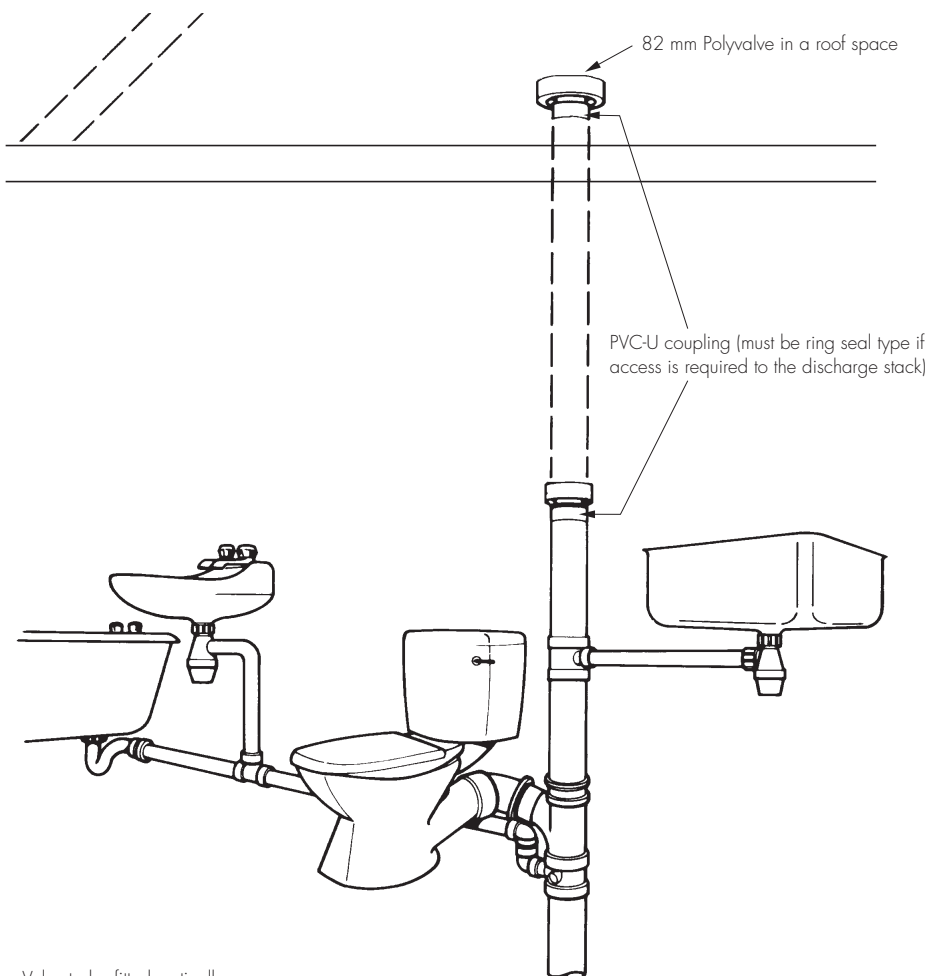


5.1 Drainage systems designed in accordance with BS EN 12056-1 : 2000 and BS EN 12056-2 : 2000 should be based on the airflow data given in Table 2. Typical installation details in accordance with BS EN 12056-1 : 2000 are given in Figures 3, 4 and 5.

Table 2 Airflow performance

Nominal size of pipe (mm)	Flow rate (l s ⁻¹)
32	6.6
40	8.1
50	9.5
82	40.1
110	43.2

Figure 3 Typical domestic installation (eg bungalow or house)

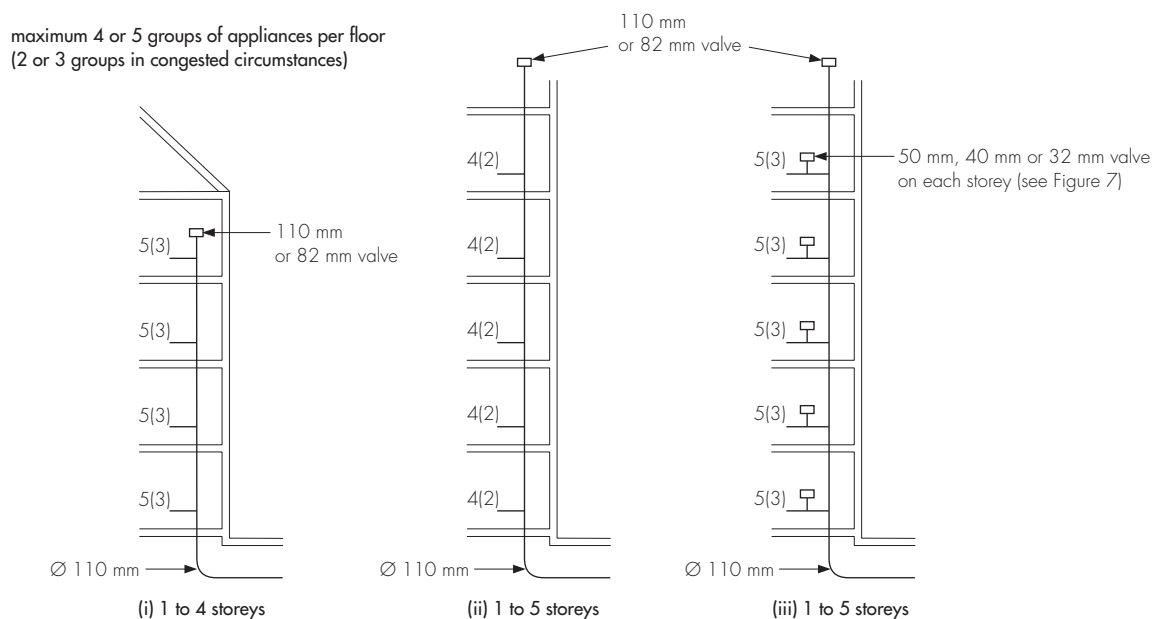


Notes: Valve to be fitted vertically.

If the valve is fitted inside a duct then the duct will require ventilation.

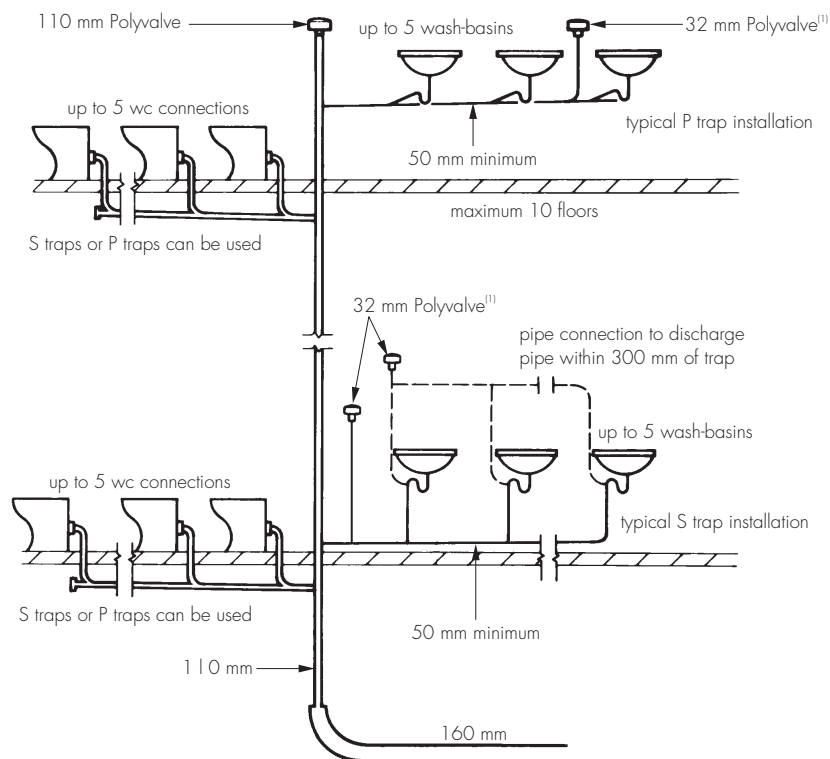
The size of branch discharge pipework and the location of appliances must be in accordance with BS EN 12056-2: 2000.

Figure 4 Domestic discharge system (eg multi-storey flats and halls of residence)



- Notes:**
- a group of appliances consists of one WC and one wash-basin
 - congested circumstances are where the frequency of use of each appliance is approximately five minutes
 - normal use in non-domestic buildings corresponds to frequencies of use of approximately 10 minutes
 - hydraulic performance tests carried out in accordance with Section 10.3.3 of BS 5572 : 1994 indicate that the installations shown above are acceptable

Figure 5 Typical non-domestic installation (eg offices, factories, schools and other types of public buildings)



(1) The valve can be positioned below flood level (ie a level of which an appliance would overflow) in accordance with section 9.5 of this Certificate.

Notes:

Valves to be fitted vertically.

If the valve is fitted inside a duct then the duct will require ventilation.

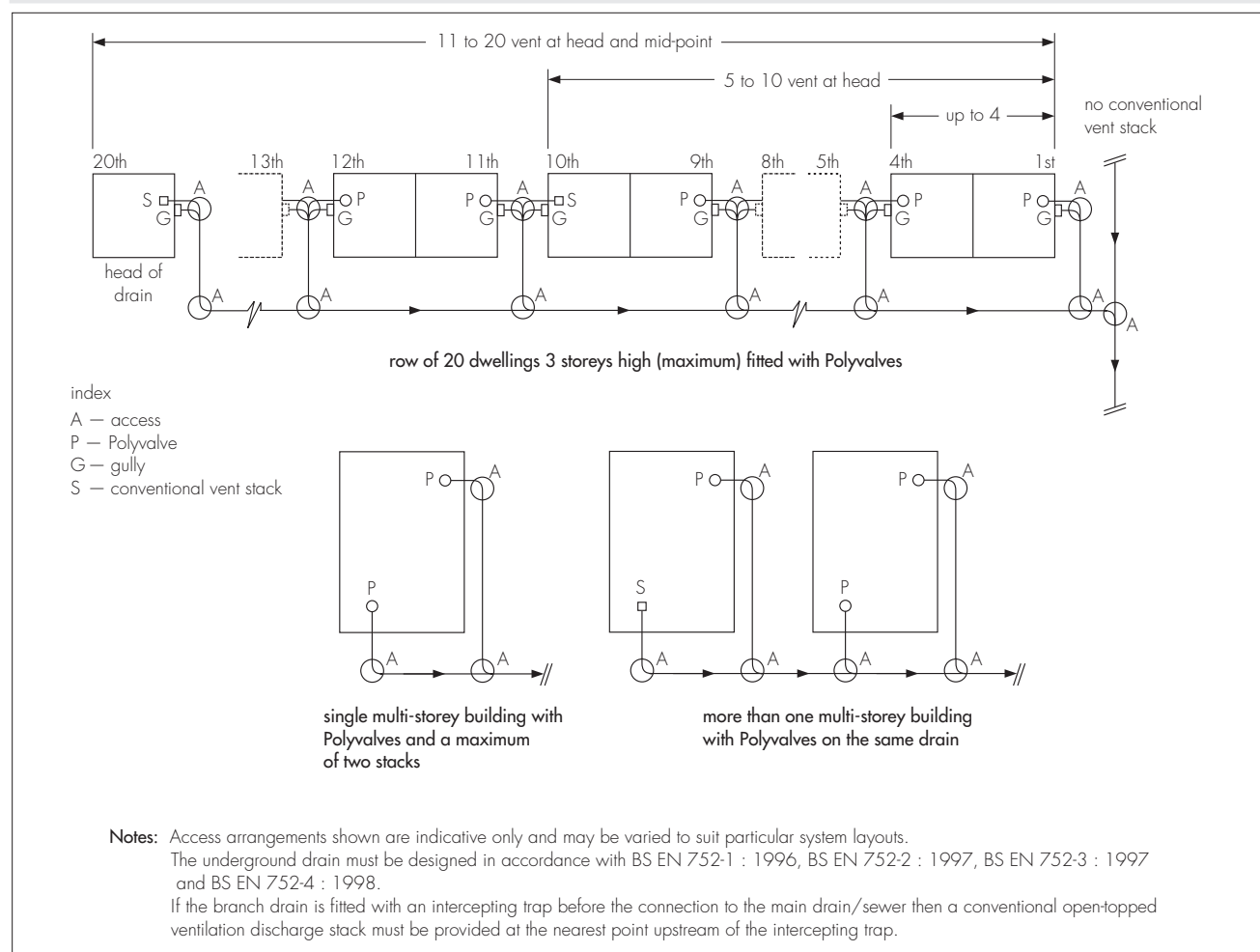
If access is required to the discharge stack then the valve must be fitted to a ring seal socket.

Branch discharge pipes to ranges of appliances must be designed in accordance with BS EN 12056-2 : 2000, clause 7.2.3, where required branch pipe ventilation may be provided by the 50 mm Polyvalve.

5.2 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 Polyvalve valves may require venting at a point upstream of the stack connection. For guidance the following should be noted (see Figure 6):

- for up to and including four dwellings, one, two or three storeys in height, additional drain venting is not required. Where a drain serves more than four such dwellings equipped with the valves, the drain should be vented according to the following rule, either by a conventional open topped ventilation or discharge stack:
 - 5 to 10 such dwellings – conventional ventilation to be provided at the head of the system
 - 11 to 20 such dwellings – conventional ventilation to be provided at the mid-point and at the head of the system.
- for multi-storey domestic dwellings (other than those referred to above) and non-domestic buildings, conventional drain venting should be provided if more than one such building, each equipped with the valves, is connected to either a common drain, itself not vented by means of a ventilation stack, or to a discharge stack not fitted with a valve.

Figure 6 Drain ventilation provisions



5.3 In all installations, 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.

5.4 The valves should be installed within the building, preferably in a freely ventilated non-habitable space such as a duct or roof, or externally to the building where they are protected from dust and insects, and easily accessible but not likely to be subject to interference, eg from vandals.

5.5 If the valves are to be installed in, or in close proximity to, a habitable space where noise of operation may cause a nuisance, consideration must be given to the use of a suitable form of sound insulation⁽¹⁾.

(1) It is a requirement of the *Zurich Guarantee Technical Manual* that all stacks be insulated in rooms in dwellings.

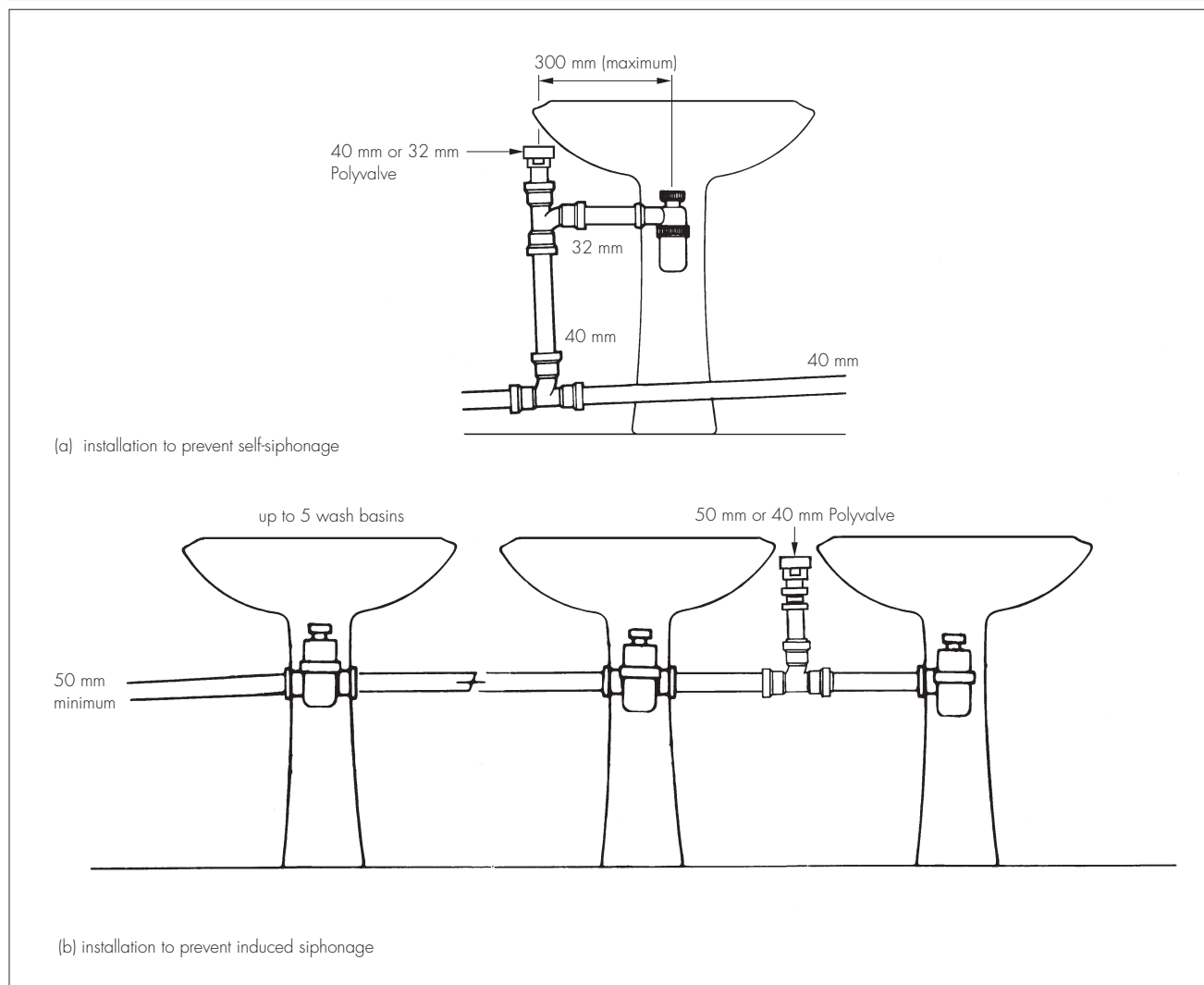
5.6 With the 110 mm and 82 mm valves the insulating cover should be used when there is a possibility of condensation forming and freezing within the valve body.

5.7 If self-siphonage may occur, a connection to the 32 mm valve is required within 300 mm of the trap (see Figure 7).

5.8 To prevent induced siphonage in a row of wash-basins, a 40 mm or 50 mm Polyvalve valve should be fitted between the two wash-basins furthest from the discharge stack (see Figure 7).

5.9 Air admittance valves should not be used when the discharge stack provides the only ventilation to septic tanks or cesspools.

Figure 7 Installation



6 Effect on water seals



6.1 Under conditions of increased pressure in the drainage system, each valve will remain closed, thereby preventing the release of foul air into the building. In a correctly designed drainage system incorporating the valves in accordance with the recommendations given in this Certificate, increases in pressure will not be sufficient to cause traps in WCs or other appliances to become unsealed. The valves will admit sufficient quantities of air into the stack when they are subjected to a reduced pressure and thereby prevent loss of water seals in appliance traps.

6.2 Should a pressure increase occur such that it is sufficient to cause the loss of water seals, it is an indication that a drain blockage has occurred or that the system is being overloaded or otherwise misused.

7 Maintenance



Polyvalve valves do not normally require maintenance. However, in the event of accidental damage or vandalism, valves fitted to ring seal sockets can be replaced easily.

8 Durability



The valves are manufactured from conventional materials 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 Certificate, the product will not be subject to significant deterioration and will have a life equivalent to that of the drainage system in which it is installed.

9 General

9.1 Installation must be carried out in accordance with the manufacturer's instructions. Joints are made by conventional ring seal or solvent weld jointing methods.

9.2 It is recommended that all Polyvalve valves are airtightness tested before installation, ie the valves should float when supported in an upright position in a bowl of water.

9.3 When the valve is fitted to a ring seal socket, a suitable lubricant recommended by the manufacturer should be applied to the valve spigot.

9.4 Solvent-weld connections must be made using solvent cement to BS 6209 : 1982. This cement is suitable for solvent welding the valves to ABS and PVC-U fittings. Care must be taken in making solvent-welded joints to prevent contact with the moving parts of the valve. Solvent welding must not be used for connection to polypropylene or polyethylene pipes and fittings.

9.5 The valves must be fitted in a vertical position above the pipe being ventilated.

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

Technical Investigations

10 Tests

10.1 Tests were carried out to BS EN 12380 : 2002 to determine:

- dimensional accuracy
- airtightness when tested to a pressure of 38 mm water gauge
- airtightness at low positive pressure
- reduced pressure required to open the valve
- effect of repeated operation
- prevention of loss of trap seals due to induced and self-siphonage.

10.2 Tests were carried out on the full range of valves in accordance with BS EN 12380 : 2002:

- drop test
- airtightness test at 30 Pa, 500 Pa and 10 000 Pa
- airtightness after endurance testing at -20°C and 60°C
- opening characteristics and airflow capacity
- effectiveness at temperatures below zero.

11 Investigations

11.1 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

11.2 An examination was made of data relating to:

- effect on trap seals when tested on five-storey test rigs (110 mm and 82 mm valve)
- stress relaxation
- creep
- durability.

11.3 Regular factory inspections have been carried out to ensure that quality is being maintained.

11.4 A user survey has been carried out to confirm performance in use.

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 5572 : 1994 *Code of practice for sanitary pipework*
- BS 6209 : 1982 *Specification for solvent cement for non-pressure thermoplastics pipe systems*
- 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 752-1 : 1996 *Drain and sewer systems outside buildings — Generalities and definitions*
- BS EN 752-2 : 1997 *Drain and sewer systems outside buildings — Performance requirements*
- BS EN 752-3 : 1997 *Drain and sewer systems outside buildings — Planning*
- BS EN 752-4 : 1998 *Drain and sewer systems outside buildings — Hydraulic design and environmental considerations*
- BS EN 1329-1 : 2000 *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Unplasticized poly(vinyl chloride) (PVC-U)*
- BS EN 1451-1 : 2000 *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Polypropylene (PP) — Specifications for pipes, fittings and the system*
- 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 1519-1 : 2000 *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Polyethylene (PE) — 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(vinylchloride) (PVC-C) — Specification for pipes, fittings and the system*
- BS EN 12380 : 2002 *Air admittance valves for drainage systems — Requirements, test methods and evaluation of conformity*

12 Conditions

12.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

12.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

12.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

12.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care. In granting this Certificate, the BBA 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 manufacture, supply, installation, use and maintenance of this product/system.

