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Plumbing information sheet No. 12

Air Admittance Valves in AS/NZS 3500.2

Aim

The aim of this document is to provide clarification of the requirements when installing Air Admittance Valves (AAVs) on plumbing and drainage systems.

Background

Air Admittance Valves (AAV's) may be installed as an alternative to a piped vent, providing that certain conditions are observed. AAV's must comply with the product standard AS/NZS 4936: Air admittance valves (AAV's) for use in sanitary plumbing and drainage systems.

AAV's are available as a single unit or may be formed as an integral part of a fixture trap. However, the construction of the AAV must meet NZ requirements.

AAV's may be used to vent fixture discharge pipes where the fixture discharge pipe exceeds the maximum permitted unventilated length.

AAV's may be used in sanitary plumbing systems as trap vents, group vents, branch vents, some stack vents, and for the ventilation of branch drains.

G13 – Foul water

G13/AS1 provides acceptable solutions for AAVs. In addition, G13/AS3 cites AS/NZS 3500.2 clauses 1-13, 15 & 16 as acceptable solutions to meet the mandatory provisions of the building code.

This document addresses the acceptable solutions for AAVs as outlined in AS/NZS 3500.2 only.

AS/NZS 3500.2

1. Using AAV's instead of piped vents:

AS/NZS 3500.2 permits AAV's to be used as (see figures 3 to 5):

- An option to a Trap Vent in any system of plumbing where a single fixture discharge pipe exceeds the maximum permitted unventilated distance.
- An option to a Group Vent or Branch Vent in a Fully Ventilated (Modified) System of Plumbing.
- An option to a Stack Vent, where the stack extends through less than 10 floor levels.
- An option for the ventilation of a Branch Drain where the combined length of the drain and fixture discharge pipe exceeds ten metres.

2. Restrictions on use:

AAV's must only be used on sanitary plumbing waste systems that have at least one open DN50 minimum vent connected to the drain.

Note: *DN50 is the minimum size open vent required for a sanitary plumbing waste system. Many will require a larger open vent.*

Where there are three or more buildings connected on a shared allotment drain, the drainage system servicing each building must have at least one open upstream vent. Each open upstream vent must be sized as a drainage vent, and be at least DN50.

For trap vents and group vents, the selected AAV must have a determined airflow capacity not less than that shown in the table in Figure 1. The determined airflow in litres per second (L/s) must be indicated on each valve.

AAV's that form an integral part of a fixture trap may only be used as a trap vent.

3. Determined airflow:

The selected AAV must have a determined airflow capacity not less than that shown in the tables in Figures 1 and 2. The determined airflow in L/s must be indicated on each valve.

Figure 1 – Minimum determined airflow capacity of AAV's when used as a trap vent, group vent or branch drain vent

Fixture unit (FU) loading on discharge stack	Minimum determined airflow capacity of AAV L/s
6	1.9
9	2.3
10	2.4
12	2.7
18	3.3
24	3.8
30	4.2
36	4.6
42	5
48	5.3
54	5.7
60	6

Table modified form AS/NZS 3500.2 Table 6.10.2(A)

Figure 2 – Minimum determined airflow capacity of AAV's venting discharge stacks

This document has been modified for NZ from:
https://www.vba.vic.gov.au/__data/assets/pdf_file/0009/98469/1.01-Sanitary-Plumbing-Air-Admittance-valves.pdf

Date created: *10 June 2020*
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Fixture unit (FU) loading on discharge stack	Minimum determined airflow capacity of AAV L/s
1	3
2	4
4	6
6	7
10	9
12	10
15	11
20	13
25	15
30	16
40	18
60	23
80	26
100	29
200	41
300	51
400	58
500	65
600	72
1000	92

Table modified from AS/NZS 3500.2 Table 6.10.2(B)

4. Sizing of AAV's:

AAV as a trap vent

An AAV with a minimum airflow capacity of 1.9 L/s is suitable for trap ventilation of any fixture. This is because the minimum airflow capacity of 1.9 L/s is suitable for a maximum of six fixture units (FU's) which is also the maximum fixture unit rating assigned to any single fixture (e.g. closet pan with flush-valve).

AAV as a group vent

The method for sizing an AAV for a single group of up to ten fixtures connected to a common discharge pipe is different to sizing for a piped group vent.

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Sizing for AAV's is based on the total fixture unit loading of the common discharge pipe, whereas sizing for group vents is based on the largest section of a common discharge pipe.

Group vent example

An AAV is to be provided for a fixture group

of four basins (4FU's), two showers (4FU's) and three closet pans with cisterns (12FU's), a total of 20 FU's. From the table in Figure 1, 20 FU's falls between the values for 18 FU's (3.3 L/s) & 24 FU's (3.8 L/s). Therefore, an AAV having an extrapolated minimum airflow of 3.5 L/s would be suitable (see figure 3).

If a fixture group connected to a common discharge pipe exceeds ten fixtures but is less than 20 fixtures, then the fixtures would be divided into two approximately equal groups. Each group would require its own AAV and the minimum airflow for each AAV would be determined on the total FU's for the respective fixture group served by the AAV (see figure 4).

5. Location of AAV's:

AAV's must be located so that:

- They are accessible for service and replacement.
- Adequate air can enter the valve.
- Where fitted within a wall space, ventilation openings are provided.
- They are not installed where air is contaminated by solvents.
- Where installed in a ceiling space, the AAV should be 150mm (approximately) above the ceiling to clear any ceiling insulation.

Note: See AS/NZS 3500.2 clause 6.10.3.

6. Installing AAV's

When installing an AAV (other than an integral part of a fixture trap) the valve shall be:

- Connected to the piping in accordance with the manufacturer's instructions.
- Connected to a:
  - fixture discharge pipe as for a trap vent; or
  - fixture discharge pipe; or
  - common discharge pipe; or
  - for a group vent or branch vent; or
  - discharge stack as for a stack vent.
- No more than 1000mm below the flood level of the fixture to which it is connected.
- Only installed as a stack vent where the stack extends through less than ten floor levels.

  Note: Should the discharge stack require relief ventilation, then either a relief vent must extend separately to the open air, or a pressure attenuator must be fitted.

- Installed upright within 5° of a vertical position.

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- Installed in areas where the ambient temperature or water discharge may vary between 0°C and 60°C.
- Protected from insect infestation, sunlight (unless permitted by the manufacturer) and mechanical damage.

Note: See AS/NZS 3500.2 clause 6.10.4.

Figure 3 – Minimum Determined Airflow for AAV: 3.5 L/s

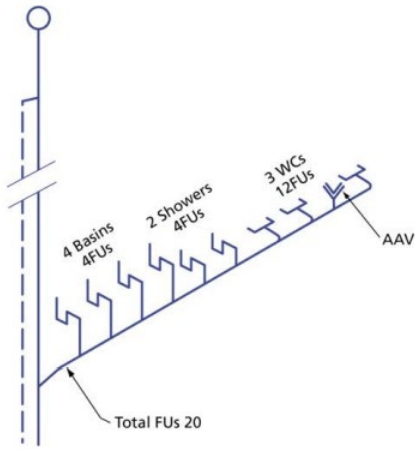


Figure 5 – Group Ventilation: Branched Common Discharge Pipe

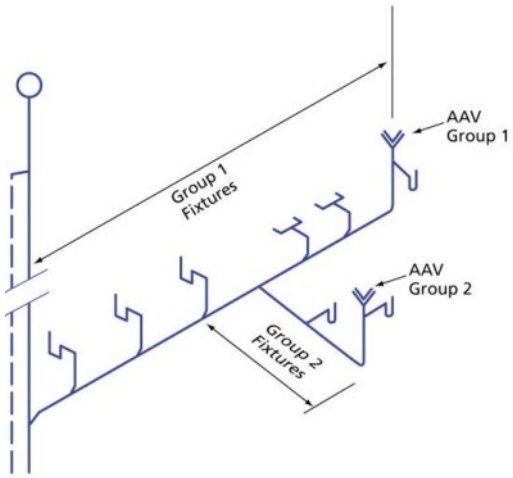
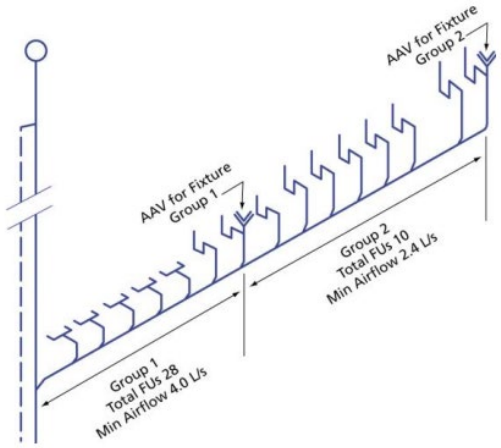


Figure 4 – Group Ventilation: 10 to 20 Fixtures



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