

Air admittance valves can save time and money

AAVs are set to have a major impact on ventilating groups of plumbing fixtures.

In the previous issue of *Plumbing and Mechanical Connection*, we reported on a testing facility at Gympie TAFE in Sydney that proved air admittance valves (AAVs) were capable of ventilating a group of plumbing fixtures.

This has opened the way for AAVs to be accredited under AS/NZS 3500.2.2 as group vents, rather than just trap vents, which account for only 10% of venting applications.

By reducing the need for the open pipe venting of sanitary plumbing systems, AAVs can result in improved efficiencies and substantial savings.

AAVs are designed to provide plumbing ventilation that will prevent the loss of water seals in traps without the need for costly roof penetration and vent piping.

Some in the industry are predicting a market explosion for AAVs following their approval for use with multiple fixtures. However, it is important that the valves are installed properly, tested and conform to the Australian Standards.

This article takes a closer look at the operation of AAVs, the benefits they offer and their future markets.

Studor Australia

Studor Australia director, Nelson Palmer, says the early AAVs, which were made of brass and copper, were inefficient, unreliable and expensive.

"However, in the early 1970s, a plastic injection-moulded valve was designed in Sweden. The Studor valve was marketed throughout Europe and then to the US in the early 1980s," Nelson says.

"The Studor valve was introduced to Australia about five years ago. Today, some 10 million AAVs have been installed."

The Studor Mini-Vent and Maxi-Vent AAVs work by opening and admitting fresh air when negative pressures occur from fixture discharge. This equalises pressure within the system, protecting the trap seals.

When the flow stops, the valve closes and gravity tightens the seals, preventing any transmission of foul air through the valve and trap seals.

Studor valves may be installed under the flood level of the fixture, including tidy installations under the shelf of a sink or vanity.

These valves are designed as the terminal for individual and group vents for up to 85 fixture units.

Using AAVs will eliminate floor and roof penetrations, as well as extensive piping up and through the roof. There are also the savings to be had from doing away with waterproofing roof penetrations.

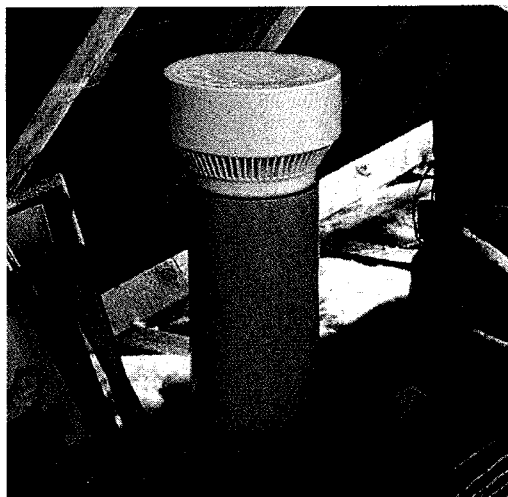
According to Nelson, significant savings in terms of materials and installation time can be achieved by replacing extensive vent piping.

"This applies particularly to multi-storey buildings, where AAVs can reduce the need for extensive venting through the building to the roof," he says.

"Other benefits include a reduction in the need for fire-stopping devices, by preventing the 'chimney effect' in the pipes, which reduces the risk of fire spreading upwards between floors.

"Protection is also provided against the entrance of vermin, the risk of water leaks through roof penetrations is eliminated, and engineers, architects and design professionals are provided with greater freedom of design.

"A major benefit is that no maintenance is required. The valves are designed to resist extreme temperatures and may be installed outside, as they are UV-protected.



Air admittance valves will reduce the need for costly roof penetrations.

"Also, repeated opening and closing will not affect their sealing operation. Studor valves have been simulator tested for 80 years and are tested twice as they leave the factory.

"They have a life-time equivalent to that of the drainage system in which they are installed."

Durgo

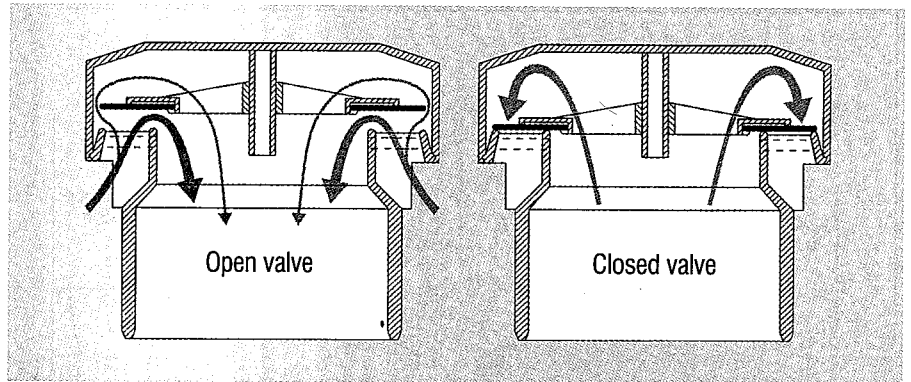
Another Standards Australia-approved AAV is the Swedish-made Durgo, which is marketed in Australia by L.W. Gemmell.

Tested by the Plumbing Testing Laboratory in Perth, the Durgo has a flow capacity of 14 litres a second. The air flow capacity of the AAVs is important, as higher airflow into the plumbing system facilitates proper cleansing and system operation.

Durgo valves are available from all plumbing wholesale outlets nationally, as either single units or in convenient plumbers' six packs, with PVC adaptors to fit various sizes of PVC pipes.

L.W. Gemmell's Craig Gemmell says the task of sewage system venting is to admit air into the system in order to break the vacuum when discharge or drainage of a fixture creates negative pressure flows through the pipes.

"Durgo valves can be used on single fix-



The job of the AAV is to admit air into the system to break the vacuum during discharge.

tures or to replace a group vent for multiple fixtures connected to a common discharge pipe. They open in the event of a vacuum and admit air into the sewer system. Otherwise they are closed tight," he says.

"It is important that these valves are installed vertically in an accessible ventilation location and a minimum of 100mm above the weir of the fixture trap which is served. They must not be used as a replacement for a sewer vent."

Craig says the market for AAVs is in its infancy, but developing, in Australia.

"These devices are popular in the US and plumbers here need to be aware of these products and the benefits they can

bring, including saving a lot of time and money," he says.

"Apart from the obvious benefits of applications in new buildings, especially high-rise developments, AAVs provide a simple solution for venting problems encountered during renovations and the retro-fitting of plumbing fixtures."

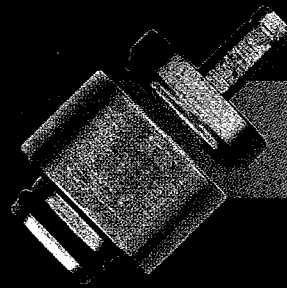
Abey Australia

Abey Australia markets the Ventapipe range of AAVs, which are awaiting Standards Australia approval.

According to Ron Lawrence at Abey, Ventapipe will admit sufficient quantities of air into the stack when it is subjected to a reduced pressure, thereby preventing

STOP water hammer.

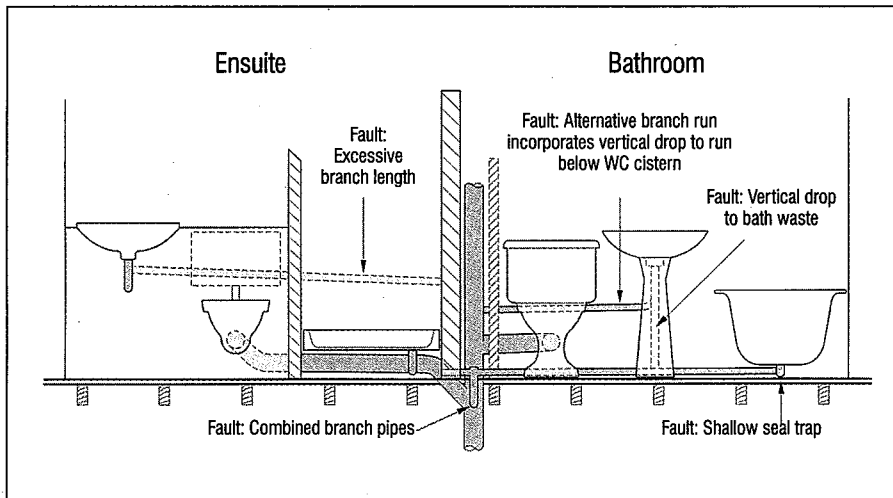
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Excessive lengths, combinations and alternative runs to branches can all lead to trap failure.

the loss of appliance trap water seals.

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

"A pressure increase sufficient to raise the level in the water seal or 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."

Abey advise that AAVs should not be used when the soil stack provides the only ventilation to septic tanks or cesspools.

A designer's perspective

Rob Gruber at Sydney's Acor hydraulic consultancy has specified the installation of a number of AAVs for building projects along Australia's eastern seaboard.

He says these have mainly been for use in multi-storey tenancies, especially when the fixture is a long way from the venting system.

"While AAVs have been successfully used in the US on a significant scale for many years, their uptake in Australia has been slow, mainly because of their restriction to single fixture applications," Rob says.

"However, the pending approval for their use with multiple fixtures is likely to see a substantial increase in their use in this country.

"For example, they will have particular benefits for apartment buildings in water-

front locations, such as Sydney, where the building is stepped back up a slope. Installation of an AAV is much simpler and less costly than weaving a vent pipe up over several levels.

"In relation to renovations, many buildings today are converted from commercial to domestic, and challenges can be encountered such as tight ceiling spaces and vents that won't line up. AAVs can be an ideal solution in these situations.

"Architects will also appreciate the increased flexibility of design and improved aesthetics offered by the opportunity to reduce ugly pipe protrusions on roofs and up external walls.

"I expect the use of AAVs to be widespread in future, including for the traditional home, as well as multi-storey buildings."

A plumber's perspective

Brian Collis of Collis Plumbing is a contractor who employs 10 plumbers for a variety of commercial and domestic projects across Sydney. Like Rob, he believes the use of AAVs is likely to grow rapidly.

"These devices are quicker and cheaper to install than conventional venting, and they are much less disruptive. In addition, AAVs enable future alterations to the building to be more easily undertaken," Brian says.

"They are particularly useful in a multi-storey building when fixtures are located in an area where it's difficult to install a

conventional vent, such as the middle floors of a 20-storey building.

"A reduction in roof penetrations means fewer leaks and less maintenance, as well as creating a safer site by keeping men off the roof."

Self-sealing device

Hepworth markets the HepvO self-sealing device, which it claims is not affected by water trap siphonage, so that it will not compromise the air in a waste system.

The HepvO contains an elastomeric membrane encapsulated within an outer casing to form a seal against sewer gases. Standards Australia has yet to classify it as an AAV.

Rob Wheat at Hepworth says the device increases the designer's scope by allowing simpler systems with less pipework.

"These units eliminate the common causes of trap failure and allow full bore flow to take place," Rob says.

"It is a slim unit which fits neatly behind pedestals and can be installed horizontally by using a 90° adaptor. This frees up space in sink and vanity units, and avoids cutting the floor under baths and showers to accommodate the U-bend of a trap."

Opportunities

Plumbers should ensure that they are familiar with the operation and benefits of AAVs, as they are likely to become increasingly common in building design specifications.

Expanded business opportunities could also be opened up for contractors who can demonstrate the practical benefits and cost advantages of these devices to potential clients. ■

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