



VAL-MATIC[®]

**An Introduction to
Inflow Prevention**

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Inflow Prevention

Prior to cross connection and security issues, valve vaults were simply a part of the water distribution system receiving little or no attention unless a problem occurred. With the advent of cross connection issues, more and more municipalities became concerned with the potential for non-potable water entering a pipeline through vault installed air valves. Often, the valve outlets were not piped leaving them exposed to floodwater or other contaminants. Municipalities began to insist that all air valve outlets be piped above grade using a “J” pipe configuration. However, this proved impractical if not impossible in vaults below streets, etc. and also opened up the possibility of malicious tampering with the “J” pipe. Additionally, in cold climates the air valve outlet was now exposed to frigid temperatures leading to freezing concerns.

Post 9/11, water distribution systems were recognized as one of our nation’s most vulnerable infrastructure assets. Once again, air valve outlets were recognized as having the potential to allow the entry of contamination into a potable water system.

Air valves play an important role in the operation of distribution systems. Air release valves provide efficiency by preventing air pockets from developing at system highpoints reducing capacity and increasing pressure loss. Air/Vacuum valves allow the system to discharge large volumes of air upon system start up and admit air when necessary to prevent a vacuum from forming and creating a pressure surge. Reservoir vents also play an important role in the intake and exhaust of air from reservoirs as the water level inside rises and falls.

Efforts to make “J” pipe configurations more secure have been underway for some time now. Screens mounted at the end of the pipe as well as in the pipe itself are now in use. But “J” pipes still don’t solve the problem of floodwater or intentional introduction of a contaminate finding its way to the outlet of an air valve or reservoir vent.

Cross contamination and security have brought about many new approaches to protecting our drinking water. One of these is the concept of inflow prevention. Inflow prevention is defined as preventing contaminated water from entering a potable water pipeline or reservoir through an air valve or reservoir vent. Inflow prevention is very similar to backflow prevention in that it impedes contaminated water from compromising drinking water. However, most backflow prevention is conceived of as an inline device that reacts to pipeline pressure changes. The inflow prevention concept is conceived of as a way to stop contaminated water from reaching an air valve or vent outlet while allowing the valve or vent to perform its function.

Inflow Preventers

An Inflow Preventer is a device that prevents the admittance of contaminated water or other fluids into a potable water pipeline or reservoir. Inflow Preventers are installed on the outlets of air valves and reservoir vents.

In addition to keeping contaminated water away from drinking water, backflow and inflow preventers share two other concepts; the need for inspection and testing in the field to assure that the device is functioning properly and the need for redundancy. The concept of inflow prevention provides for these capabilities. Standards currently under development will most likely include provisions for both annual inspection and field-testing.

By following the successful and proven path of the backflow community and including field inspection, field testing and operational redundancy inflow prevention is proving to be as essential as backflow prevention.

