



**Eng. Naftali Zloczower**

**Air valves serve a number of very important functions, some of them, at times, conflict with each other.**

**The overall purpose of air valves is to control air in liquid conveyance systems. This control is accomplished by regulated intake or discharge of air, to or from the system.**

**Air is discharged in order to prevent disturbances to flow, in order to ensure continuous, efficient, energy conserving flow, in order to prevent damage to pipes, fittings and accessories and bodily harm to operators and consumers, etc'.**

**Controlled intake of air is necessary in order to enable drainage in the system and in order to prevent damaging, and often dangerous, vacuum conditions.**

**A well controlled and regulated combination of intake and discharge of air is required for the prevention or dampening of often-severe pressure surges.**

**In most air/vacuum (kinetic) valves, air release (automatic) valves, and combination air valves, the same orifice serves for the intake and for the discharge of air. In these air valves, designing for one function (intake or discharge), directly determines the opposite function.**

**In most liquid conveyance systems, it is prudent, and often crucial, to differentiate between the function of air intake and the function of air discharge. Sometimes, it is necessary to enable one function, while preventing the other.**

**In pump suction pipes and in siphons, for instance, it is important to release entrapped air to enable building and to prevent losing prime and siphonage. But, it is also essential to prevent any intake of air, which will, otherwise, break the prime or the siphonage.**

**In many sites, such as in urban centers, where air valves are installed in underground manholes or valve boxes that are susceptible to flooding, it is essential to prevent the infiltration of contaminated water into the water supply or distribution system. In these cases, too, a one-way, discharge-only air valve is necessary.**

**In other cases, it may be necessary to prevent air or gas discharge, yet, provide vacuum protection. When a wastewater air valve is installed in a site frequented by the public, it may be prudent to prevent discharge of odorous gases or fumes.**

However, it may still be necessary to provide vacuum protection. Here, a normally closed, one-way, intake-only, air valve is the answer.

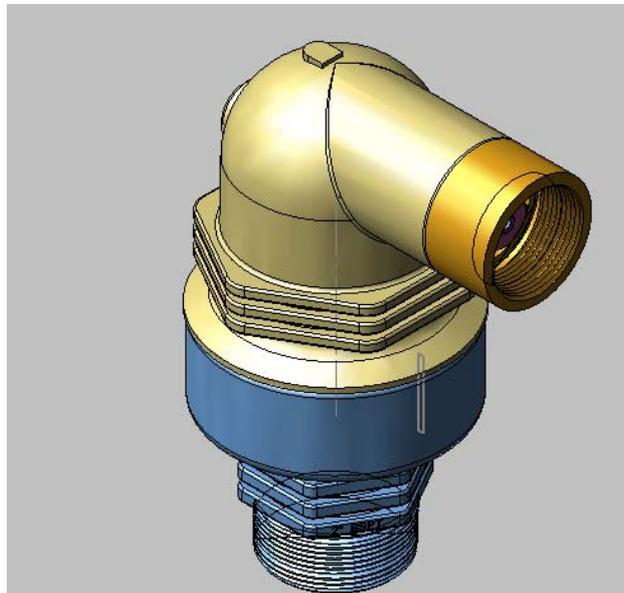
Where surges are induced by water column separation, followed by the return of the water column and the consequent pressure wave, these surges can be reduced greatly, and, sometimes, eliminated by a specially designed air valve. This air valve should admit large volumes of air to prevent vacuum and its subsequent down-surge, yet, slow-down and control air discharge, to allow the cushioning affect of the slowly dissipating air pocket and by preventing the local-surge-producing slam of the orifice sealing mechanism.

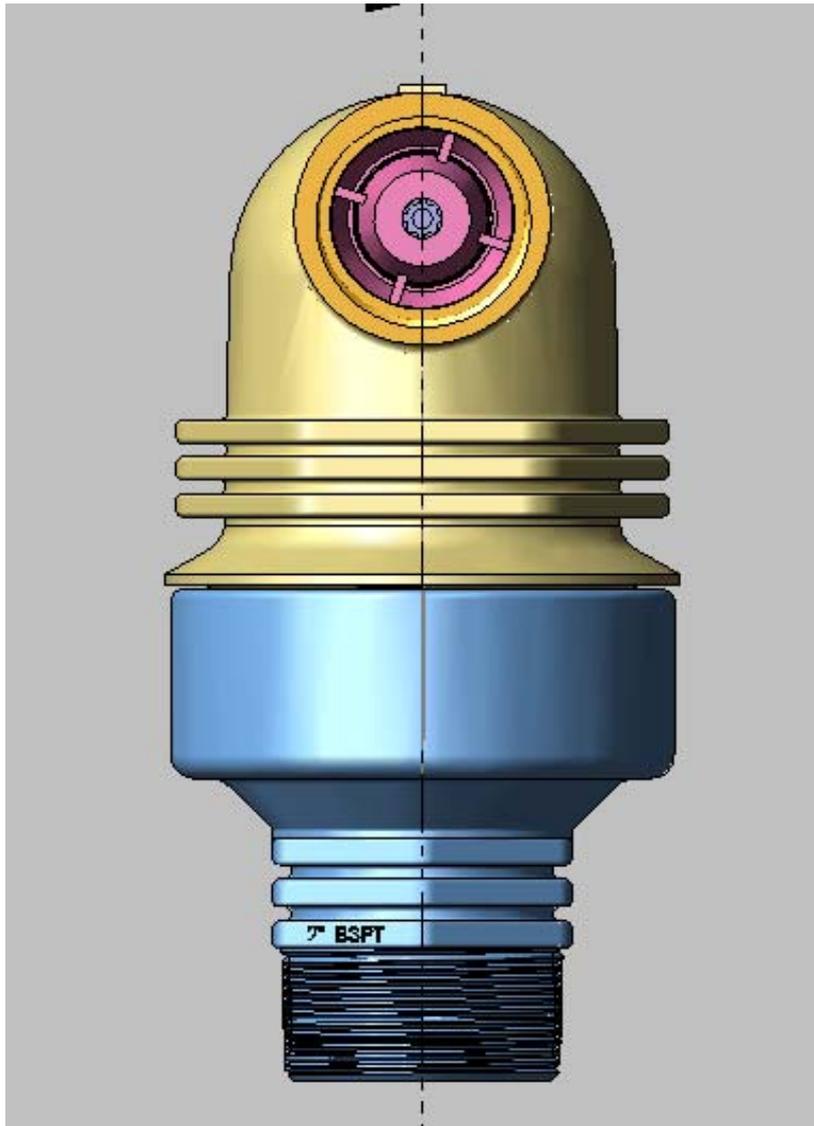
 **A.R.I.** developed a simple way to transform the world renowned “BRAK” D-040, “SEGEV” S-050, and “SAAR” D-020 and D-025 into one-way air valves, able to perform, in an efficient and dependable way, the functions described above.

Specially designed, spring loaded check valves, were custom engineered to enhance each of the above air valves for each of the particular tasks.

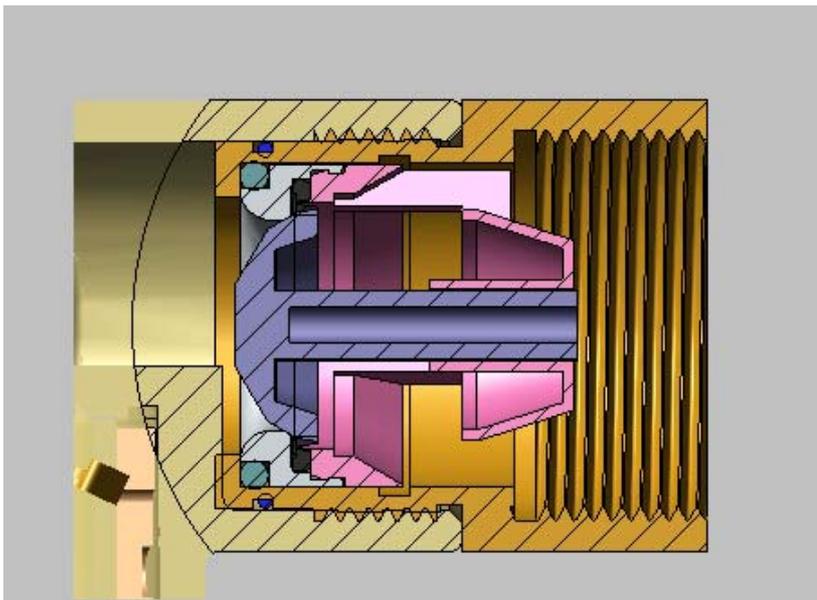
Sealed check valves provide normally closed, on-way airflow (in or out) for all the above air valve models.

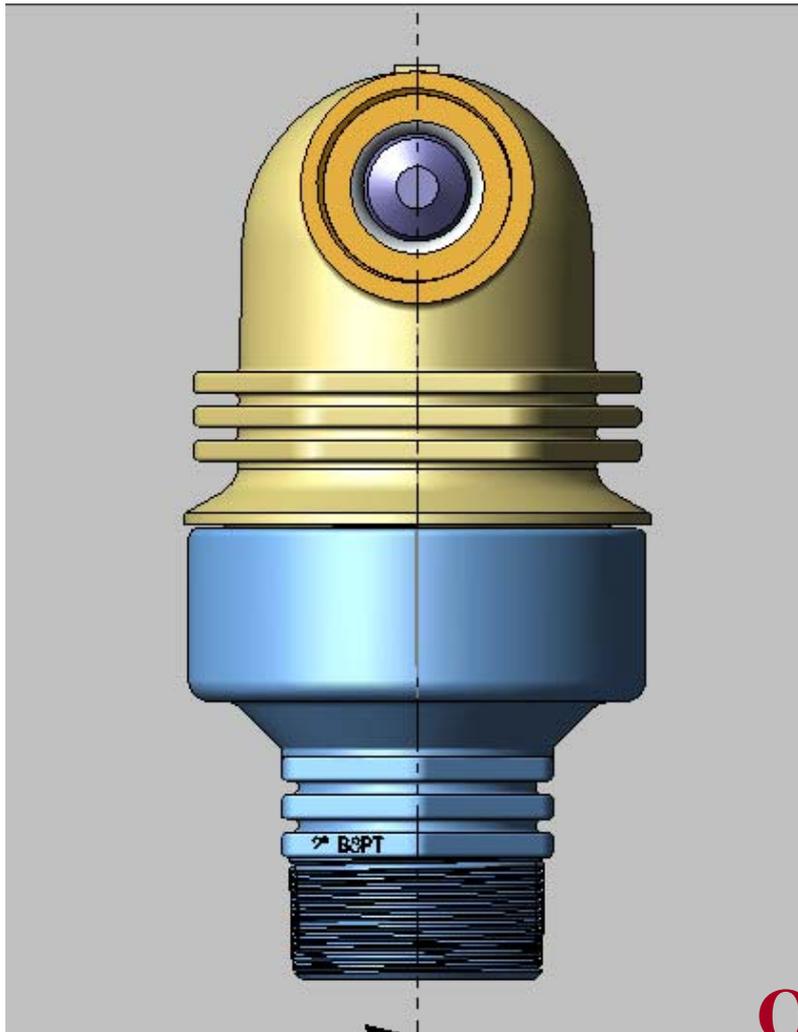
Check valves with pre-designed, drilled, small, orifices provide differential flowrates for intake and for discharge.



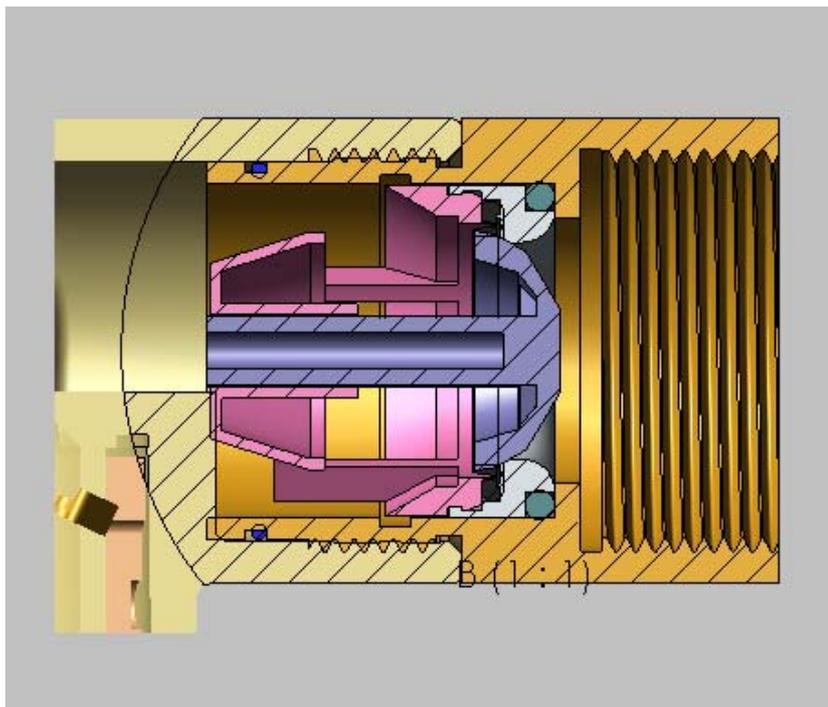


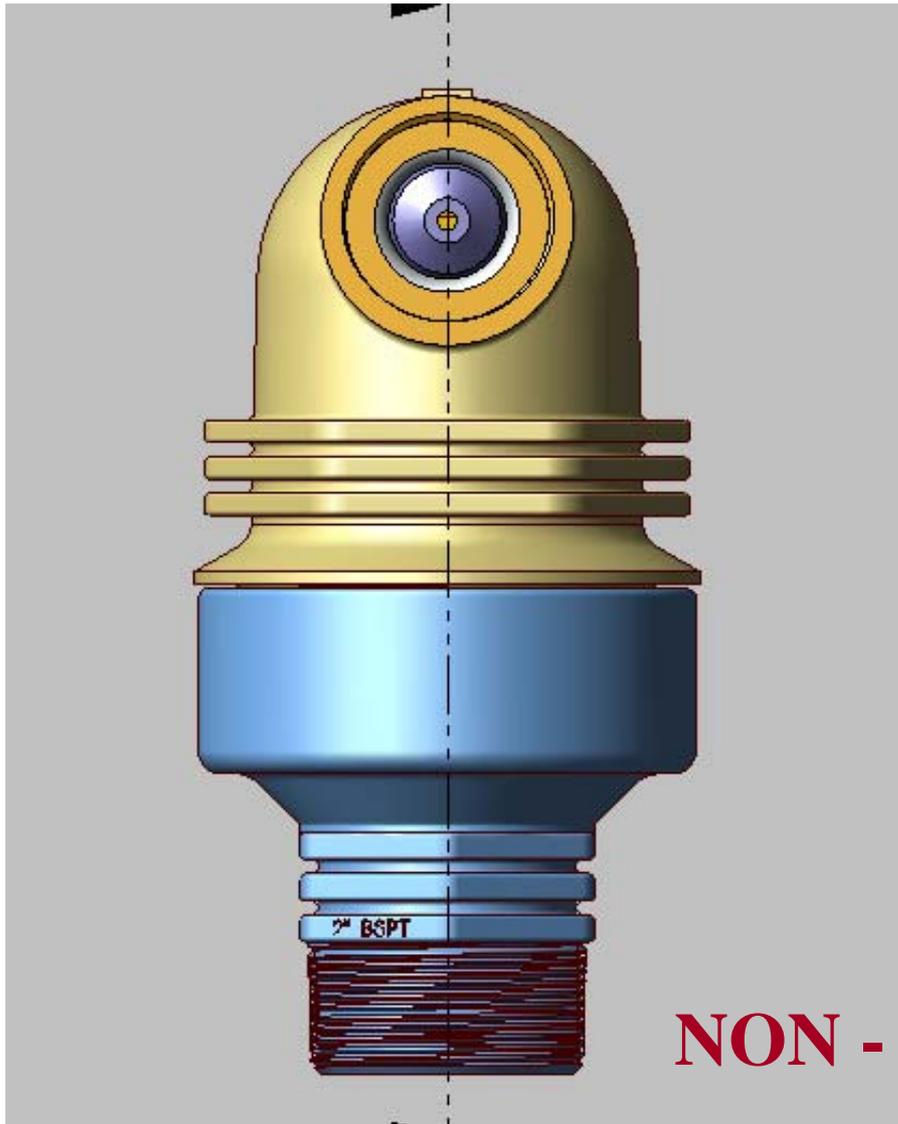
**ONE – WAY  
OUT**



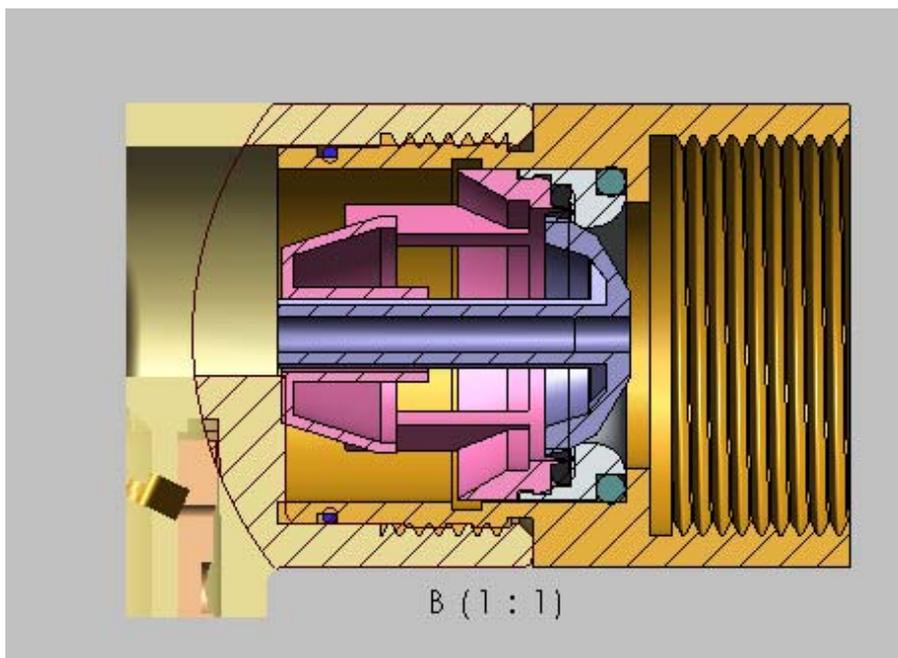


**ONE -WAY  
IN**





**NON - SLAM**





**WASTEWATER  
ONE-WAY  
&  
NON-SLAM**

