

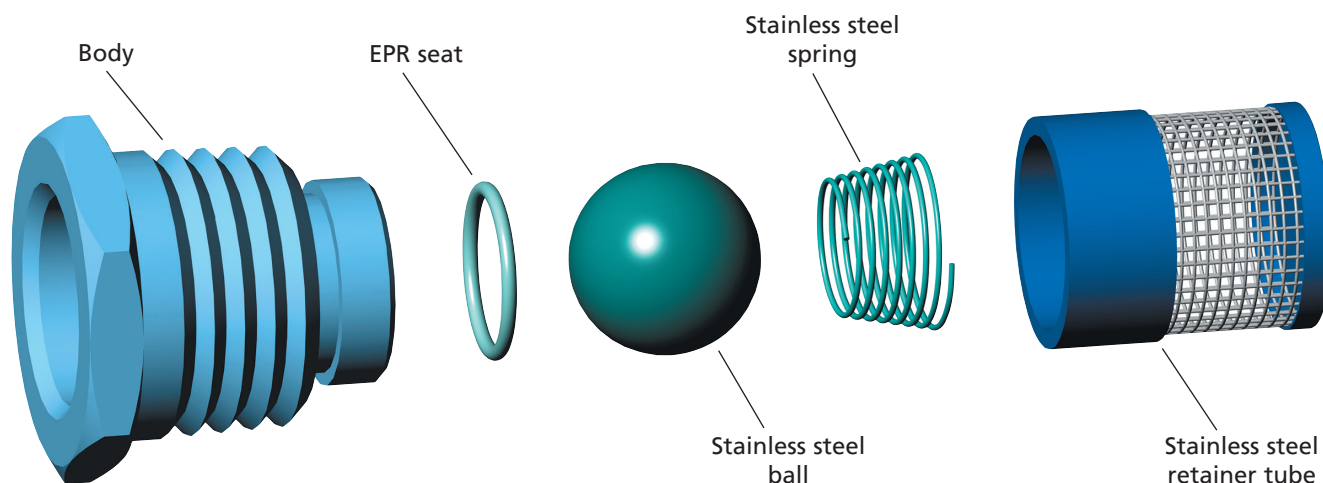
Vacuum Breakers

Anti-Siphoning Check Valves



- Vacuum check valves and backflow devices
- Protection against collapse or back flowing

Series VB8



Fast Acting, Tight Closing, High Capacity

Kadant Johnson vacuum breakers provide a simple, dependable way to relieve any unwanted vacuum condition that may develop in a closed vessel or pipeline. They can be used to prevent contamination from back flowing in fluid handling systems and to protect equipment against collapse or implosion. They combine tight closing with instant response; provide large air venting capacity; are designed for easy installation and long service life.

Positive Closing, Low Breakaway

The successful combination of the spring action on a round ball and the soft resilient seat assures positive bubble-tight closing, even at very low differential pressures. And, of course, the higher the pressure the tighter the seal.

Since only slight spring pressure is needed for seating, the ball comes off the soft seat at a very low vacuum condition, providing almost instantaneous protection. Sealing is accomplished by an EPR O-ring. The supporting seat, however, is designed to assume any pressure in excess of the small amount needed for sealing, thus preventing any excessive compression of the O-ring.

Quiet, Trouble-Free Operation

The soft resilient seat, combined with the gentle spring action, provides quiet opening and closing; chatter is completely eliminated. Corrosion-resistant seating surfaces leave little danger of any sticking or leaking. The simple design assures long and dependable service life, as proven both in the laboratory and in the field.

Easily Installed, Easily Maintained

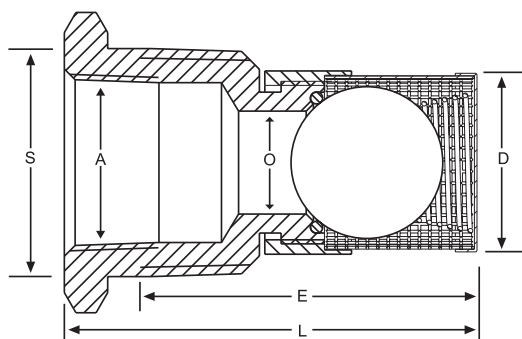
Kadant Johnson vacuum breakers have hex heads and standard NPT pipe threads, and are simply threaded into pipe fittings or available tank openings.

Rigorously Tested

In exhaustive endurance tests Kadant Johnson vacuum breakers have been subjected to 120 psig of steam and then vacuum, four times a minute, and still opened freely and closed bubble-tight after a million such test cycles. Every individual vacuum breaker is bubble-tested before it leaves the factory.

High-Pressure and Temperature

Kadant Johnson vacuum breakers are rated for use with pressures up to 300 psig and temperatures up to 365°F. Higher operating pressures are possible, depending upon size, seal materials, and temperatures.



System Connection "S"	Quick Ship No. (Brass)	Quick Ship No. (Stainless Steel)	Air Intake "A"	Total Length "L"	Engaged Length "E"	O.D. of Tube "D"	Diameter of Orifice "O"
3/8" NPT	24A75200	24A75600	1/4" NPT	1 1/2"	1 1/8"	9/16"	1/4"
1/2" NPT	24A76000	24A76400	3/8" NPT	1 3/4"	1 3/8"	1 1/16"	9/32"
3/4" NPT	24A76800	24A77200	1/2" NPT	2 1/8"	1 5/8"	13/16"	13/32"
1" NPT	24A77600	24A78000	3/4" NPT	2 3/8"	1 7/8"	1 1/16"	19/32"
1 1/2" NPT	24A78800	24A79000	1 1/4" NPT	3 1/16"	2 1/2"	1 9/16"	7/8"

NPT - National Pipe Thread

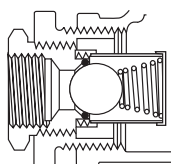


Figure 1
Horizontal installation in either end or side of tee, showing use of reducing bushing.

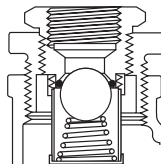


Figure 2
Vertical installation in top of tee, showing use of reducing bushing.

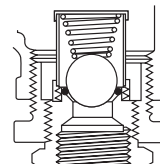


Figure 3
Vertical installation in bottom of tee, showing use of reducing bushing.

Simple Installation

The drawings above show how the vacuum breaker can be installed in a threaded opening in either a vertical or horizontal position. When installed in a pipeline fitting, use of a reducing bushing is required to make sure the vacuum breaker does not intrude far enough to impede flow in the line or bind against any internal wall.

Vacuum Required to Open

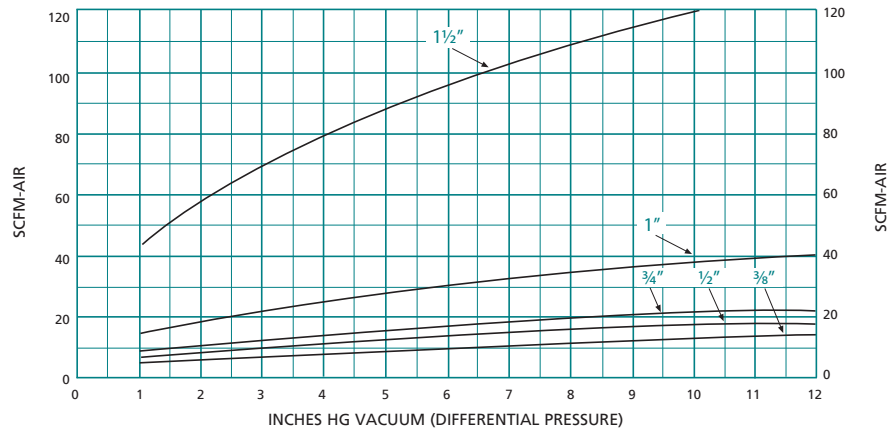
System Connection	Differential Pressure	Horizontal	Vertical	
		Side Air Intake	Top Air Intake	Bottom Air Intake
3/8"	In. H ₂ O	7.00	4.30	10.5
	In. Hg	0.51	0.32	0.77
	PSI	0.25	0.16	0.38
1/2"	In. H ₂ O	9.30	10.6	18.0
	In. Hg	0.68	0.78	1.32
	PSI	0.34	0.38	0.65
3/4"	In. H ₂ O	15.3	15.0	25.0
	In. Hg	1.13	1.10	1.84
	PSI	0.55	0.54	0.90
1"	In. H ₂ O	10.0	5.90	19.5
	In. Hg	0.73	0.43	1.43
	PSI	0.36	0.21	0.70
1 1/2"	In. H ₂ O	10.0	4.90	20.3
	In. Hg	0.73	0.36	1.49
	PSI	0.36	0.18	0.73

Note: Stainless steel ball was used to arrive at all figures.

Values given are averages of test results and may vary slightly.

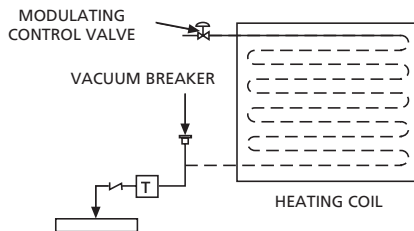
Approximate Air Handling Capacities

The air handling capacity curves were plotted from calculations using the C_v factors of the vacuum breakers. The C_v factor is a flow coefficient determined by actual test which mathematically gives the relationship between the rate of flow and the pressure drop. The flow formula used was recommended by the Fluid Controls Institute. Curves shown are for varying system connection sizes.

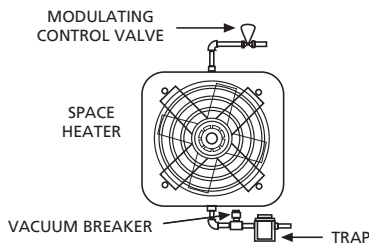


Note: Capacities will vary slightly due to position of installation and may deviate from capacity curves near opening vacuum pressure.

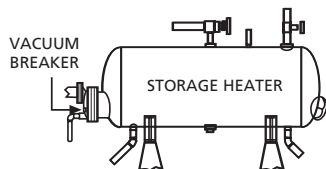
Typical Installations of Vacuum Breakers



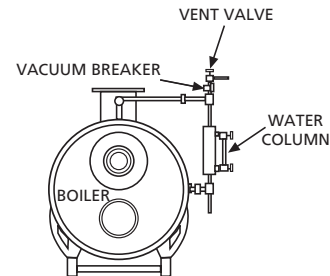
Vacuum breaker installed on heating coil. When the modulating control valve closes, the steam in the coil will condense. A vacuum may exist in the coil even with the control valve partly open and positive pressure between the control valve and the coil.



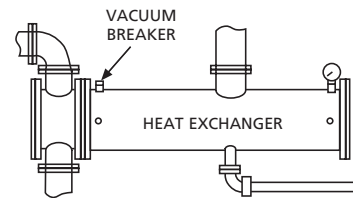
Typical space heater installation with vacuum breaker protection.



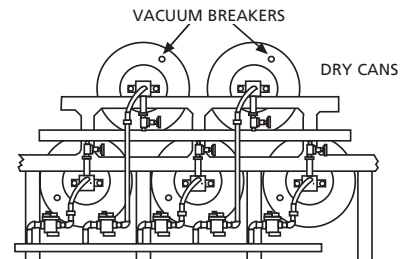
Horizontal storage heater with heating coils protected by a vacuum breaker.



Typical application of a vacuum breaker as used on a steam boiler to break a vacuum imposed when a boiler is shut down, thereby condensing the steam in the boiler and creating a vacuum. This condition causes the boiler to be flooded by pulling in excess water from the return system.



Typical installation of a vacuum breaker in a heat exchanger.



Textile dry cans, multiple slasher cylinders, print cans, etc., can be protected against collapse with vacuum breakers.

Dimensions are for reference only and subject to change.