

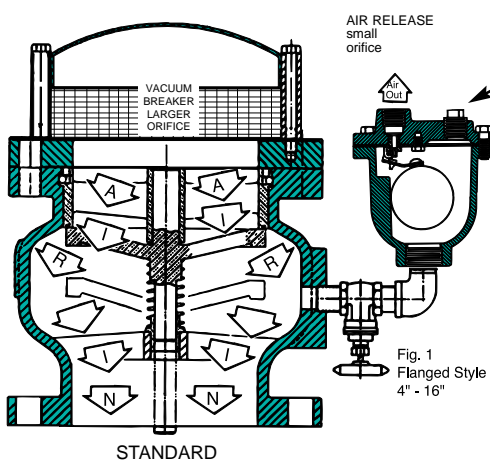


Vacuum Breaker W/Optional Air Release Valve For Water and Sewage
1/2" - 3" Threaded 4" - 10" Flange Style

INTRODUCTION

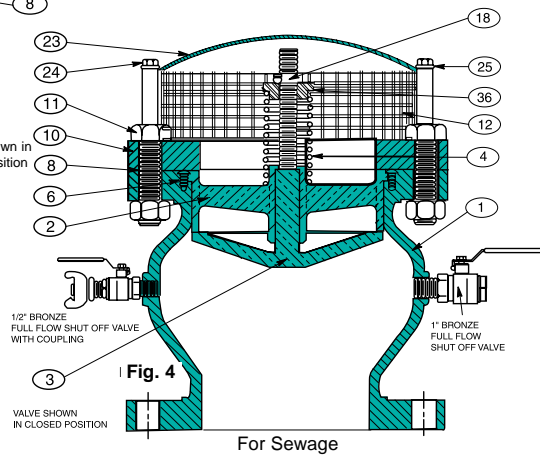
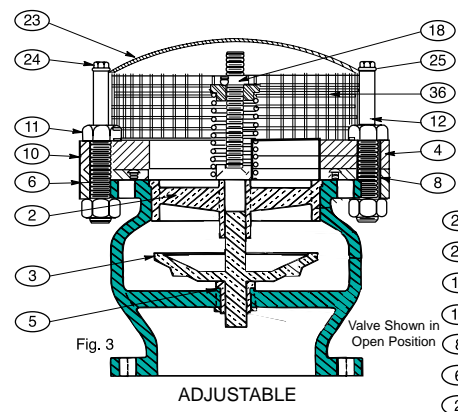
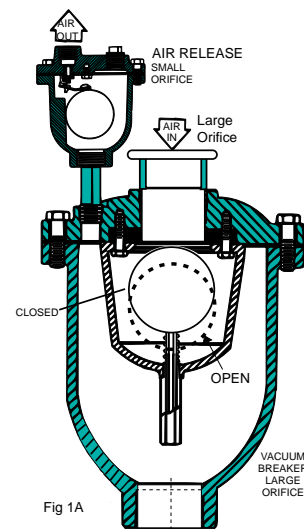
Cla-Val Vacuum Breaker Valves are designed to perform years of trouble free operation and service life. The valve functions to open, allowing air to enter a pipeline, tank or system to prevent vacuum forming. Sizes 1/2" thru 3" have threaded inlet and outlet, 4" and larger have a flanged inlet as standard and a threaded, flanged or plain outlet covered by a steel hood.

Vacuum Breaker Valves in 2 Style:



Optional Air Release Valve

Standard Vacuum Break valves have an internal spring with a fixed rate to open between 1/4 - 1/2 PSI. See fig 1. and Fig 1A For Vacuum Breaker adjustability, external spring with adjusting nut is supplied see Fig.3. For Sewage, a clear flow area body with external spring and flushing valves is supplied. see fig.4



HOW THEY WORK

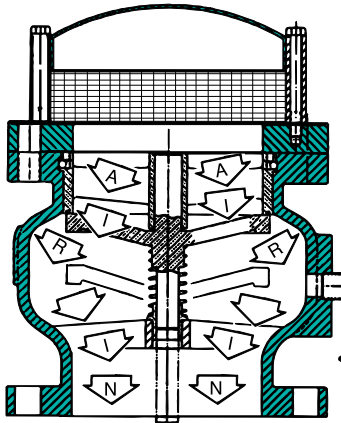
The vacuum breaker valve (large orifice combined with Air Release (small orifice) are both normally closed but when installed at points where vacuum can occur. they work as follows:

The large orifice valve will open under vacuum, allowing air into pipeline to fill the void, created by vacuum. Next it instantly closes trapping air, that is compressed, there by cushioning return of positive fluid pressure, to prevent severe pressure surge and water hammer,

Optionally the small orifice Air Release Valve will also open, due to vacuum and stays open acting as the outlet, to slowly release the trapped air, from the system until normal pressure is achieved at which point the small orifice closes.

RECEIVING AND STORAGE

Immediately inspect shipment upon receipt for damage in transit and report same to carrier. Store valves in a dry area until ready to install to prevent damage when storing longer than six months coat rubber seat with FDA approval grease to preserve resiliency.

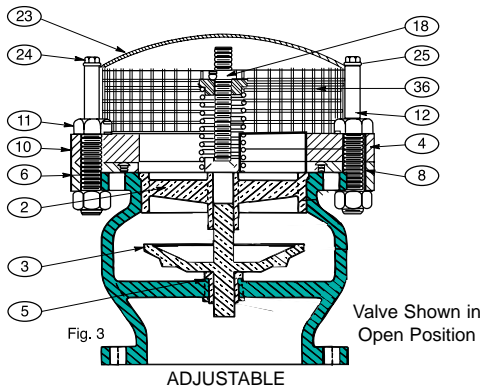


STANDARD

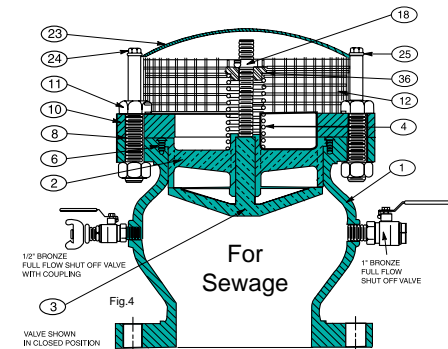
VALVE CONSTRUCTION FLANGE STYLE

Vacuum breaker valve bodies are heavy cast iron. The seat & plug of the flange style valves are bronze Fig 1. The plug of the flange style is the only moving part when the valves open. The springs are annealed and polished for many years of compression cycle life. see table A&B for materials.

Materials & Part names are the same for FLG Styles: Fig. 1, Fig. 3, & Fig. 4. Specify Fig. No. and size when ordering parts for series 38VB flanged styles.



ADJUSTABLE



Detail No.	Part Name	Material
1	Body	Cast Iron
2	Seat	Bronze with Buna-N® Seal
3	Plug	Bronze
4	Spring	Stainless Steel
5	Bushing	Bronze
6	Seat Retaining Screws	Stainless Steel
8	Gasket	Compressed Non-Asbestos Fiber
10	Ring Plate	Steel
11	Bolt and Nut Assembly	Steel, Zinc Plated
12	Bird Screen	Stainless Steel
18	Threaded Set Collar	Steel, Zinc Plated
23	Hood Assembly	Steel
24	Hood Retaining Screws	Steel, Zinc Plated
25	Hood Washer	Steel, Zinc Plated
36	Spring Retainer	Steel

* Not included in 2" & 2.5" Size

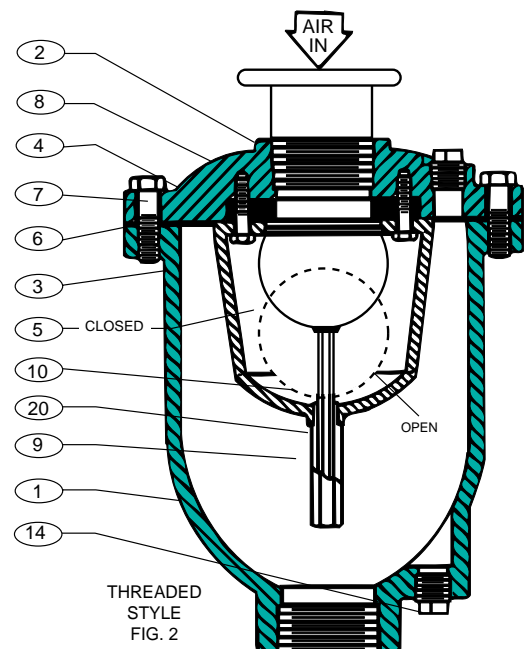
Table A Parts List

Valve Construction Threaded Style

Threaded style vacuum breaker 1/2"-3" size, all internal parts, are stainless except valve seat is Buna-N®. The float and guide are the only moving parts assuring long life with minimum maintenance. See Table B for standard material details.

Detail No.	Part Name	Material
1	Body	Cast Iron
2	Cover	Cast Iron
3	Baffle	Ductile Iron
4	Seat	Buna-N
5	Float	Stainless Steel
6	Gasket	Non-Asbestos
7	Cover Bolt	Alloy Steel
8	Retaining Screw	Stainless Steel
9	Guide Bushing	Stainless Steel
14	Pipe Plug	Iron
10	Spring*	Stainless Steel

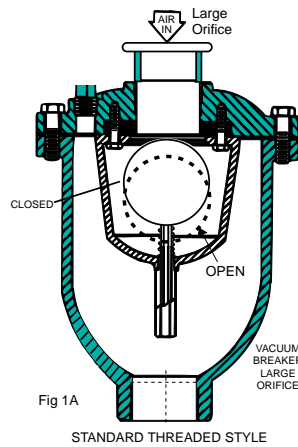
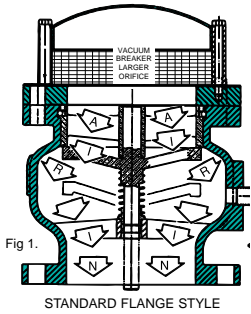
* Recommended Spare Parts
Table B Parts List



INSTALLATION/OPERATION

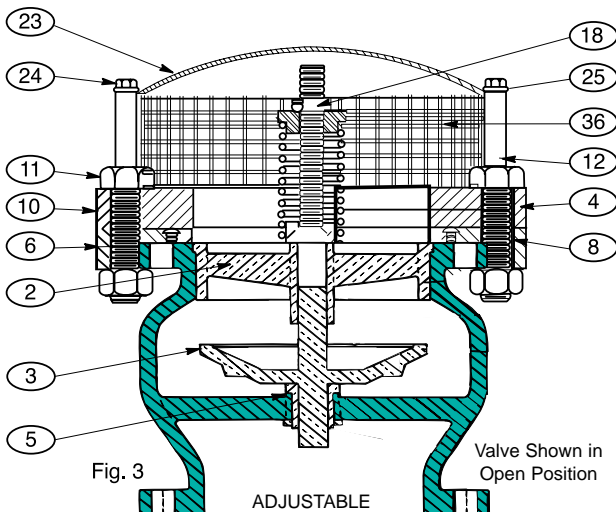
Installation of the vacuum breaker valve is important for its proper operation. Valves must be installed in a vertical position with the inlet down on high points of a pipeline or tank, where vacuum conditions are anticipated. A full ported shut-off valve, under the valve, should be installed for future inspection or maintenance.

The vacuum breaker valve will open to allow air to re-enter the pipeline or tank for any reason that the pipeline or tank is drained. Allowing air re-entry will prevent vacuum forming that would otherwise cause pipeline or tank to collapse and also prevent water column separations which can cause pressure surges and damage as the water column rejoins.

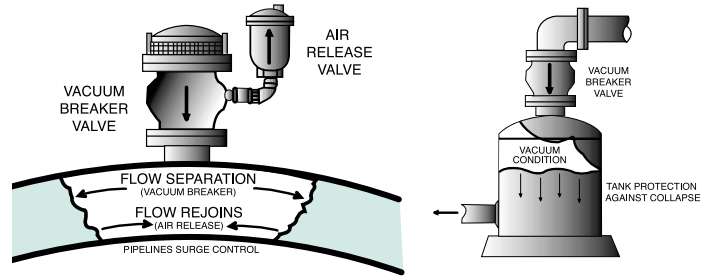


SETTING THE BREAKER VALVE

The standard vacuum breaker Fig.1 and Fig.1A above are set from the factory to open between 1/4" & 1/2" PSI. This is setting is not adjustable. The vacuum breaker having an external spring for water or for sewage is set at the factory per customers specification. After installation the Vacuum breaker can be re-adjusted to suit actual operating conditions simply by tightening or loosening #18 seat collar Fig 3.



TYPICAL INSTALLATION

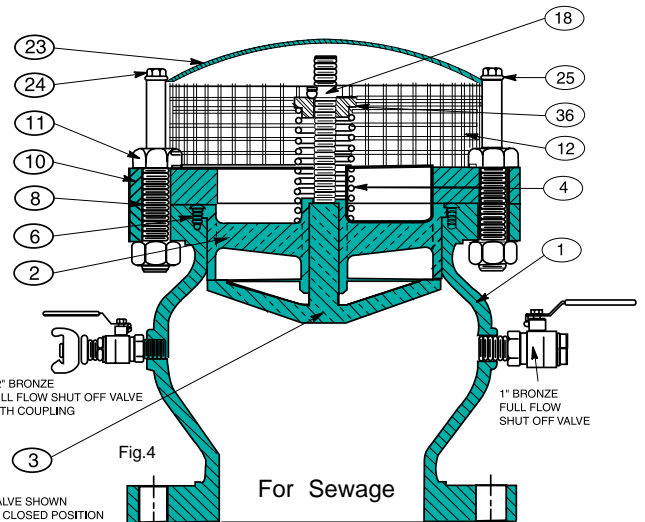


SEWAGE APPLICATIONS

The Cla-Val Vacuum Breaker for sewage has clear flow unobstructed body to prevent clogging. This valve is supplied with (2) 1" full flow valves for flushing out the valve periodically as may be required.

FLUSHING PROCEDURE FIG. 4

1. Shut the isolation valve under the vacuum breaker (As provided by others).
2. Depressurize the vacuum breaker by slowly opening one of the full flow valves mounted on the valve body.
3. Flush with pressurized water from a water tanker or remove the vacuum from the pipeline or tank and take it to the maintenance shop for cleaning.
4. During flushing, push down the external spring to create a cleansing action around the plug #3 and thru the sea. #2.



MAINTENANCE

Cla-Val Vacuum Breakers operate automatically and no regular lubrication or maintenance is required. A visual inspection annually to observe if any leakage is occurring by simply removing the hood #22 will be more than adequate.

DISASSEMBLY

The Vacuum Breaker Valve may be disassembled without removal from the pipeline or may be removed from the line for more convenience. Work on the valve should be performed by a skilled mechanic. Refer to figures 1,3,4 and 2

WARNING: Drain or depressurized valve before removing the cover completely or pressure released may cause bodily harm.

1. Close inlet shut-off valve. Open drain valve Fig.4 or remove drain plug Fig.2 (14) or remove cover bolts (11) Fig.3 on the top cover (10).
2. Pry cover (10) loose and lift off valve body.
3. Remove seat retainer screws (6) and inspect seat for cracks in rubber or wear in sealing surface.
4. Lift plug (3) from body (1) and guide bushing (5) and inspect for wear.
5. Examine gasket (8) and replace if damaged.
6. Clean and inspect parts. Remove all foreign material from body and cover. Replace worn parts as may be observed.

RE-ASSEMBLY

All parts must be cleaned and gasket surfaces should be cleaned with a stiff wire brush in the direction of serration or machine marks. Worn parts, gasket and seals should be replaced during reassembly.

1. Place plug, 3 spring 4 and seat (2) in the body and retain with round head seat fastener (6).
3. Place gasket over flange. The gasket must cover the seat (2) for proper seat retention.
4. Place ring plate (10) on valve body on the flange and install flange bolts and nuts per Table D cover and flange bolt torques.
5. Using a cross tightening method, tighten to the torques listed in table 3 in three increments
6. Place valve back in service. slowly open the inlet isolation valve. Check flanges for leakage.

<u>Bolt Size</u>	<u>Torque (Ft-Lbs.)</u>
1/2"	45
5/8"	93
3/4"	150
7/8"	202
1"	300
1-1/8"	450
1-1/4"	650
1-3/8"	800

TABLE D. COVER AND FLANGE BOLT TORQUES

PARTS AND SERVICE

Parts and Service are available from your local representative or the factory. Make note of the valve size, series No, and serial No. located on the valve nameplate and contact:

Cla-Val • 1701 Placentia Ave. • Costa Mesa, CA 92627-4475
Phone: 949-722-4800
Fax: 949-548-5441

A sales representative will quote prices for parts or service.