

# Series 33A

Sizes 1" - 2" - 3" - 4" - 6"

## Air Release & Vacuum Breaker Valve (Threaded & Flanged)



Threaded



This product meets Federal Mandate for Lead Content Limit



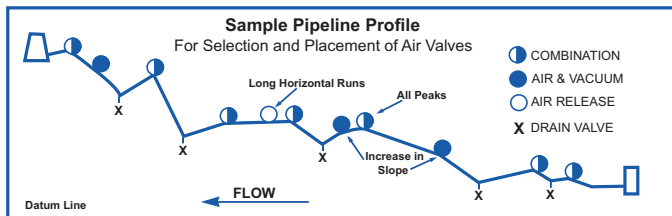
Flanged

- Standard Maximum Operating Pressure 300 psi
- Standard Epoxy Coated Ductile Iron Body
- Automatically Eliminates Air Pockets
- Easily Serviced Without Removal from System
- Engineered For Lasting Service

Designed to protect pipelines and vertical turbine pump applications from air lock and vacuum collapse, the Cla-Val Model 33A High Performance Combination Air Release and Vacuum Breaker Valve eliminates air and prevents vacuum formations in pipelines. A large venting orifice and large float clearances freely exhaust or admits air during pipeline filling or draining.

During normal pipeline operation, air accumulation and buoyancy cause the float ball to lower or lift. As the water level lowers inside the valve, small amounts of accumulated air are released through the small orifice. Once air is released, the float poppet system closes drip tight.

Valve servicing is simple because the entire float poppet system can be replaced without removal of the valve body from the pipeline.



### Typical Applications

- Transmission Pipeline High Points
- Water Treatment Plant Piping High Points
- Vertical Turbine Pump Discharge

### Installation

Series 33A Combination Air Release and Vacuum Breaker Valves are typically installed at high points in pipelines for air release, or at anticipated pipeline vacuum occurrence locations. Install Series 33A at regular intervals (approximately 1/2 mile) along uniform grade line pipe. Mount the unit in the vertical position on top of the pipeline, and include an isolation/shutoff valve.

Series 33A is often installed upstream of check valves in pump discharges to vent air during start-up and to allow air reentry when the pump stops.

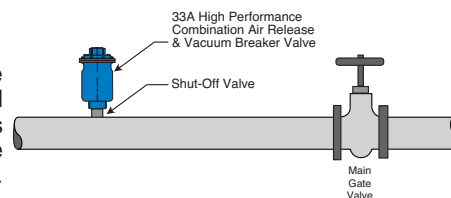
### Operation

**Air Release Mode— Valve is normally open.**

When line is filled or pump started, air is exhausted through the normally open 33A valve. As liquid fills the valve, float ball rises to form a drip-tight closure and remaining air is exhausted through small orifice.

**Vacuum Prevent Mode** When line pressure drops below positive pressure and the liquid level lowers, the float drops, unseating the valve and allowing air into the line, thus preventing a vacuum.

**Note:** Available for Sea Water Service See Material Specifications



## Dimensions (In Inches)

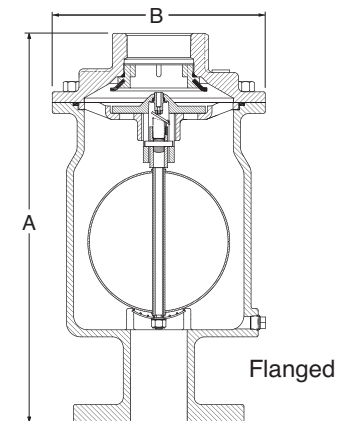
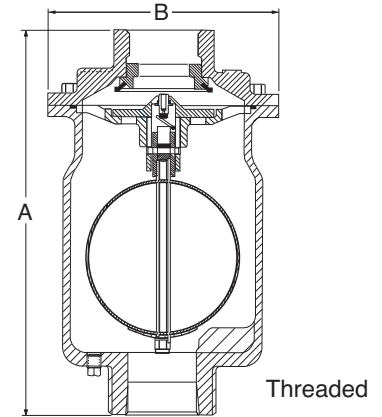
## MODEL 33A - 1", 2", 3", 4" and 6" Sizes

Valve Size	33A Pressure Class 300 Lb Threaded				33A Pressure Class 150 Lb Flanged (INLET)			
	1"	2"	3"	4"	2"	3"	4"	6"
A	9.10	12.44	12.75	12.75	13.88	15.56	15.75	16.38
B	6.25	7.50	9.00	9.00	7.50	9.25	9.25	11.00
E	—	—	—	—	.62	.75	.94	1.00
Inlet (ANSI)	1" NPT	2" NPT	3" NPT	4" NPT	2"	3"	4"	6"
Outlet (NPT)	1" NPT	2" NPT	3" NPT	4" NPT	2"	3"	4"	6"
Number of Holes	—	—	—	—	4	4	8	8
Diameter of Bolts	—	—	—	—	.63	.63	.75	.75
Shipping Wt. (Lb.)	25	29	38	40	39	48	50	70

### Pressure Ratings

Valve Size	Orifice Dia.	Standard Maximum Pressure	Materials of Construction
1"	.076"	300 psi	• Epoxy Coated Ductile Iron ASTM A536 65-45-12
2"	.076"	500 psi	• Epoxy Coated Cast Steel ASTM A 216WCB
3" & 4"	.125"	300 psi	• ASTM B61 Naval Bronze
3" & 4"	.076"	300 psi	• ASTM B 148 NI Aluminum Bronze
6"	.076"	300 psi	• 316 Stainless Steel
			• Duplex Stainless Steel
			• Super Duplex Stainless Steel

**Note:** Higher Pressures Available upon Request for sizes 3" & 4"



## Specifications

### Standard Internals

Float: Stainless Steel 304SS Standard, T316 or Monel optional (extra cost)

Balance internals parts Stainless Steel and Delrin

Seals Nitrile Rubber or Viton® (extra cost)

### Temperature Range

Water to 180° F

### Optional:

- Well Service Throttling Device - Model TD

### When Ordering, Please Specify

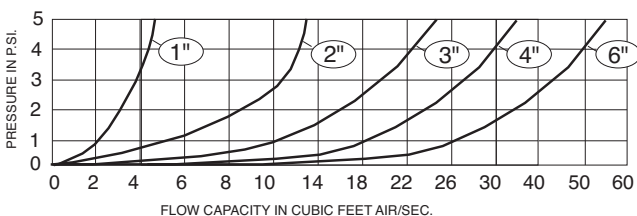
- Catalog No.
- Valve Size
- Pressure Rating
- Materials

## Valve Sizing Selection

### Large Orifice Air-Vacuum Capacity

Determine anticipated water flow and allowable pressure differential for the pipeline application. Select valve from chart to exhaust or admit air at the same rate as water filling or draining (in CFS). For larger flows, two or more Model 33A's may be installed in parallel

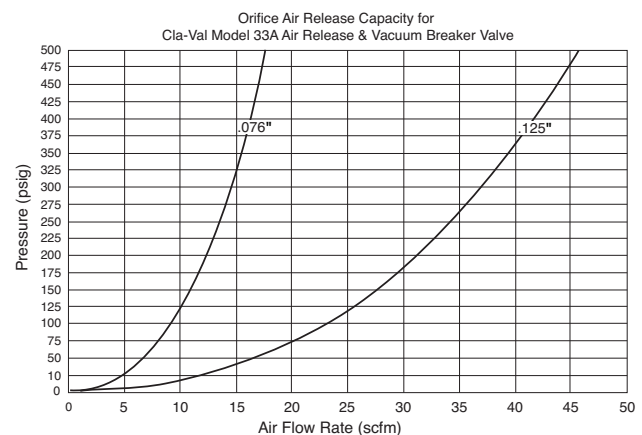
### Large Orifice



Note: For sizing made easy request:  
Cla-Val Selector Slide Rule

### Small Orifice Capacity

During pressurized pipeline operation, small pockets of entrapped air will be released through the float actuated 0.076 or .125 inch orifice. Use chart to determine discharge capacity.



# Series 34



## Air Release Valves



- Ductile Iron Body
- Stainless Steel Trim and Float
- Easily serviced without removal from pipeline
- Working pressures to 800 psi
- Engineered for drip tight seal at low pressures

Cla-Val Series 34 Air Release Valves are designed to vent entrained air that collects at high points in a pipeline. This valve continuously eliminates air from a system by releasing small quantities of air before large air pockets can occur. In many installations, continuing accumulations of air in the pipeline (lacking air release valves); cause flow capacity to slowly decrease; power consumption slowly increases; un-noticeable at first, until flow drops dramatically, even stopping due to air blocks in the piping. Another problem resulting from excessive air accumulation is unexplained pipeline rupture. These ruptures are passed off as the result of ground settling or defective pipe, Where as in reality its large air pockets that greatly increase pressure surges (normally occurring) when flow stops and starts causing the rupture. During normal pipeline operation, air accumulation at the high point will displace the liquid within the air valve and lower the water level in relation to the float. As level of the liquid lowers, where the float is no longer buoyant, the float drops and opens the valve orifice seat and permitting accumulated air to be exhausted to atmosphere. After air is released, the liquid level in the air valve rises and closes the valve orifice seat. This cycle automatically repeats as air accumulates inside the air release valve, thereby preventing the formation of air pockets.

### Installation

Series 34 Air Release Valves are typically installed at high-points in pipelines and at regular intervals, of approximate 1/2 mile, along uniform grade line pipe.

Mount the unit in the vertical position on top of the pipeline with an isolation valve installed below each valve in the event servicing is required. A vault with adequate air venting and drainage is recommended.

### Note:

Vacuum check valves can be supplied on the discharge of all size air release valves to prevent air re-entering the system; during negative pressure conditions

### Purchase Specifications

The air release valve shall be of the float operated, simple lever or compound lever design, and capable of automatically releasing accumulated air from a fluid system while the system is pressurized and operating.

An adjustable designed orifice button shall be used to seal the valve discharge port with drip-tight shut-off. The orifice diameter must be sized for use within a given operating pressure range to insure maximum air venting capacity.

The float shall be of all stainless steel construction and guaranteed to withstand the designed system surge pressure without failure. The body and the cover shall be ductile iron and valve internal parts shall be stainless steel and Viton™ or Buna-N® (standard) for water tight shut-off.

The air release valve shall be manufactured per ANSI/AWWA C512-04 Series 34 from Cla-Val in Newport Beach, CA, USA.

### Product Specifications

#### Sizes

1/2", 3/4", 1", 2", 3" NPT

#### Pressure Ratings (see note)

150 psi  
175 psi  
300 psi  
800 psi

#### Temperature Range

Water to 180°F

Note: Specify when operating pressure below 10 PSI

#### Materials

Body and Cover:  
Ductile Iron ASTM 536 65-45-12

#### Float:

Stainless Steel

#### Internal Parts:

Stainless Steel

#### Seal:

Viton™ or Buna-N® (Standard)

visit [www.cla-val.com](http://www.cla-val.com) to see our complete line of air and check valves.



# Series 35

## Air and Vacuum Valves



This product meets Federal Mandate for Lead Content Limit

- Provides High Capacity Air Venting and Air Intake
- Stainless Steel Trim Standard
- Stainless Steel Floats Guaranteed
- Fully Ported Valves - No Restrictions
- Designed For Drip Tight Seal At Low Pressures

The Cla-Val Series 35 Air and Vacuum Valve is designed to perform two separate functions. First, it will allow large quantities of air to be exhausted from the pipeline as it is being filled with water. When this air has been vented completely, water will enter the valve causing the float to seal tightly against the seat to prevent water flow. Secondly, if the line is being drained, either intentionally or as a result of pipeline breakage, the valve responds to the loss in pressure and opens. This allows air to re-enter the pipeline and prevents potentially damaging vacuum from developing.

Note: The Series 35 does not open under pressure to exhaust small quantities of air which may collect at high points during system normal operation. The Series 34 Air Release Valve is required for this function.

### Installation

Series 35 Air and Vacuum Valves should be installed at high points or at grade changes within the pipeline. Mount the unit in the vertical on top of the pipeline with isolation valve below each valve in the event servicing is required. A vault with adequate venting and drainage should also be provided.

### Purchase Specifications

The air and vacuum valve shall be able to automatically exhaust large quantities of air during filling of a pipeline and allows air to re-enter pipeline during the draining or when a negative pressure occurs.

The inlet and outlet of the air and vacuum valve shall have the same cross-section area as the pipe size. The float shall be guided by a stainless steel bottom guide shaft. The 4" and larger valve floats shall have top and bottom guide shafts of hexagonal cross section and have a protective steel discharge hood.

The float shall be of all stainless steel construction guaranteed to withstanding the design system surge pressure without failure. The body and cover shall be concentrically located and of ductile iron and the valve internal parts shall be of Stainless Steel with Buna-N® rubber seat.

The Air and Vacuum Valve shall be manufactured per ANSI/AWWA C512-04, Series 35 from Cla-Val, Newport Beach, CA USA.

### Design Specifications

#### Sizes

- 1/2", 1", 2", 3" NPT
- 4" through 12"
- 125 lb. flanged ANSI Rated
- 250 lb. flanged ANSI Rated
- 14" through 24"

#### Pressure Ratings

- 175 psi
- 300 psi

#### Temperature Range

- Water to 180°F

Note: Specify when operating pressure below 10 PSI

#### Materials

- Body and Cover (1/2" - 12" 125 & 250 lb.)
- Ductile Iron
- Body and Cover 14"- 24"
- Cast Iron A126

#### Float:

- Stainless Steel

#### Internal Parts:

- Stainless Steel

#### Seal:

- Buna-N® Rubber

### When Ordering, Please Specify:

1. Model Number
2. Inlet Size - NPT or Flanged
3. Inlet Pressure Rating

#### Optional:

For anti-shock air valve shut-off order with arrestor check device (suffix "AC").

# Series 36

## Combination Air Release and Vacuum Valve



This product meets Federal Mandate for Lead Content Limit

- **Stainless Steel Standard**
- **Stainless Steel Floats Guaranteed**
- **Fully Ported Valves - No Restrictions**
- **Easily Serviced Without Removal From Pipeline**
- **Engineered For Drip Tight Seal At Low Pressures**

The Cla-Val Series 36 Air and Vacuum Valve is a multipurpose valve that combines the operation of both the Model 34 Air Release Valve and Model 35 Air and Vacuum Valve. It functions to exhaust large quantities of air in the pipeline during the filling cycle and to admit air, as necessary, to prevent potentially dangerous vacuum from forming when being emptied either intentionally or as a result of pipeline breakage.

**Note: Cla-Val Air Valves are manufactured to meet ANSI-AWWA C512-92 Standards.**

### Installation

The Series 36 Combination Air Valve should be installed at high points at grade changes within the pipeline.

Mount the unit in the vertical position on top of the pipeline with an isolation valve installed below each valve in the event servicing is required. A vault with adequate venting and drainage should also be provided.

### Design / Purchase Specifications

The combination air valve shall combine the operating features of both an air and vacuum valve and an air release valve in one housing. The air and vacuum valve portion shall automatically exhaust large quantities of air during the filling of the pipeline and automatically allow air to reenter the pipeline when the internal pressure of the pipeline approaches a negative value due to column separation, draining of the pipeline, or other emergency. The air release valve portion shall automatically release small amounts of air from the pipeline while it is under pressure.

The inlet and outlet of the valve shall have the same cross-section area. The float shall be guided by a stainless steel guide shaft and seat drip tight against a synthetic rubber seal. 4" and larger valves shall have dual guided shafts of hexagonal cross section and a protective discharge hood.

The float shall be of all stainless steel construction and capable of withstanding maximum system surge pressure without failure. The body and cover shall be concentrically located and of ductile iron and the valve internal parts shall be stainless steel or Buna-N® rubber.

The Combination Air Release and Vacuum Valve shall be manufactured per ANSI/AWWA C512-04 Series 36 from Cla-Val., Newport Beach, CA, U.S.A.

### Design Specifications

#### Size Inlet/Outlet

1", 2", 3", 4" NPT or Flanged  
3" through 8"  
125 lb. flange & ANSI  
300 lb. flange & ANSI

#### Pressure Ratings (see note)

150 psi  
300 psi

#### Temperature Range

Water to 180°F

Note: Specify when operating pressure is below 10 PSI

#### Materials

Body and Cover:  
Ductile Iron ASTM  
A536 65-45-12

#### Float:

Stainless Steel

#### Plug:

Stainless Steel

#### Internal Parts:

Stainless Steel

**Seal:** Buna-N® Rubber

Note: Manufactured to meet ANSI/AWWA C512-04

### When Ordering, Please Specify

1. Model Number
2. Inlet/Outlet Size
3. Inlet Pressure Rating
4. Orifice Size

#### Optional:

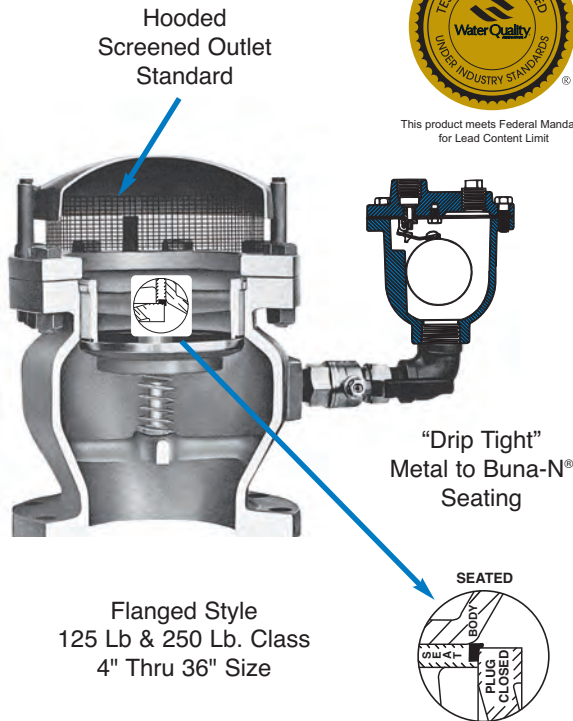
For Anti-Shock Air Valve shut-off, order with arrester check device (suffix "AC").

# Series 38VB/AR

## Vacuum Breaker / Air Release Valves for Water and Wastewater



This product meets Federal Mandate for Lead Content Limit



Flanged Style  
125 Lb & 250 Lb. Class  
4" Thru 36" Size

### Vacuum Prevention And Slow Air Release For Pressure Surge Control

Cla-Val Vacuum Breakers are reliable and economical pipeline surge control components, requiring no regular maintenance.

Standard valves are designed to open with minimal (1/4 psi) pressure differential across the orifice. Higher or lower relief settings are available.

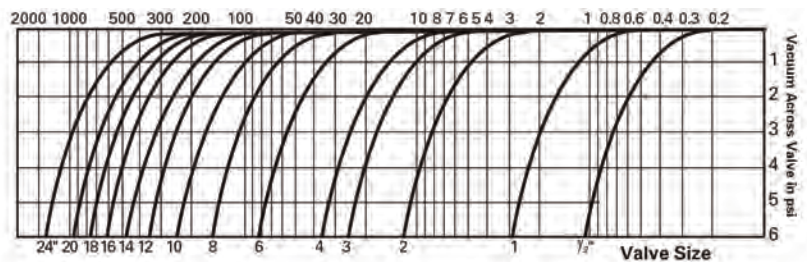
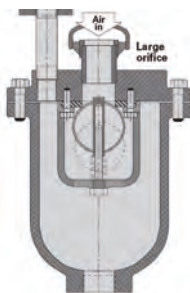
The Vacuum Breaker Valve (Large orifice combined with Air Release Valve (small orifice) are normally closed. But when installed at points where water column separation can occur, both orifices open admitting air into pipeline, then instantly close to trap air and thereby cushioning rejoining of the water column. In this manner severe pressure surge/water hammer is prevented as the system returns to normal operation.

Simultaneously the small orifice Air Release Valve opened due to vacuum and stays open venting the discharge of trapped air from pipeline slowly until gradual normal pipeline pressure is achieved. Various small orifice are available. See small orifice chart.

Water column separation in a pipeline may create high levels of vacuum only momentarily, but severe damage, such as a pipeline rupture can occur when the water column rejoins. Also momentarily vacuum conditions can easily cause a thin wall pipeline or sealed water tank to collapse due to vacuum when draining fluid. Metal to Buna-N® insures "drop tight" seal at any pressure. For these reasons it is sound engineering practice to use Cla-Val Vacuum Breaker Air Release Valves to prevent water column separation in pipelines and collapse of tanks.

### Air Inflow through Valve in Standard Cubic Feet of Free Air/Second (scfs)

Inflow: Large Orifice Air Inlet/Vacuum Valves



Outflow: Small Orifice Air Release Valves

