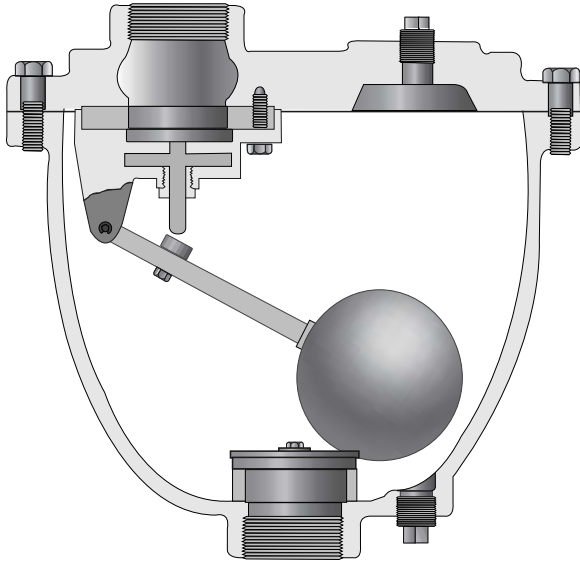




— Series — 36

Combination Air Release and



- **Stainless Steel or Bronze Trim 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.

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.

Purchase Specification

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 cast iron and the valve internal parts shall be of stainless steel or Buna-N® rubber.

The Combination Air Release and Vacuum Valve shall be Series 36 from Cla-Val., Newport Beach, CA, U.S.A.

General Specifications

Size Inlet/Outlet

1", 2", 3", 4" NPT
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:
Cast Iron ASTM
A 126, Class B

Float:
Stainless Steel

Plug:
Stainless Steel

Internal Parts:
Stainless Steel

Seal: Buna-N® Rubber

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 arrestor check device, order valve with suffix "AC"
See Data Sheet Page 33

Vacuum Valve Data and Sizing Guide

Air and Vacuum Valve Sizing

1. Series 36 Combination Air Release and Vacuum Valves should be sized to handle the maximum amount of air to be exhausted **or** admitted into the pipeline and not exceed an acceptable pressure differential across the valve discharge orifice.
2. Each high point or change in grade must be examined independently when determining valve size. Use the steepest slope for calculations.
3. Use the flow capacity charts located on Series 36 Data Sheet to assist in valve sizing.
4. Determine the smallest valve size capable of **exhausting** air equal to the filling rate of the pipeline in CFS while not exceeding a pressure differential of 2 psi across the valve orifice. (Based on pump capacity).

The following formula is recommended to calculate the rate of flow in CFS for filling the pipeline:

Where: CFS = Cubic feet per second
GPM= Gallons per minute

5. Determine the smallest valve size capable of **admitting** air equal to the potential flow in CFS while not exceeding a pressure differential of 5 psi across the valve orifice. (Based on gravity flow).

The following formula should be used to calculate the rate of flow in CFS that can occur within the pipeline under gravity flow conditions.

$$Q = .0007872 \ C \sqrt{S} D^5$$

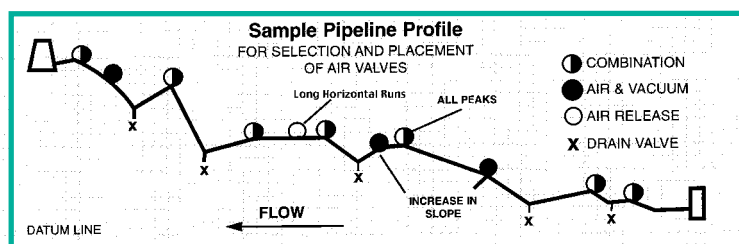
Where: Q = Flow of water in cubic feet per second
C = Coefficient in Chezy's formula = 110
S = Slope in feet per foot of length
D = Inside pipe diameter in inches

6. If thin wall pipe is being used, the risk of pipeline collapse due to the formation of vacuum must be considered. The following formula may be used to calculate the collapsing pressure of thin walled cylindrical steel pipe using a safety factor of four:

$$P = 16,250,000 \left(\frac{T}{D} \right)^3$$

Where: P = Collapsing pressure in psi
T = Thickness of pipe in inches
D = Diameter of pipe in inches

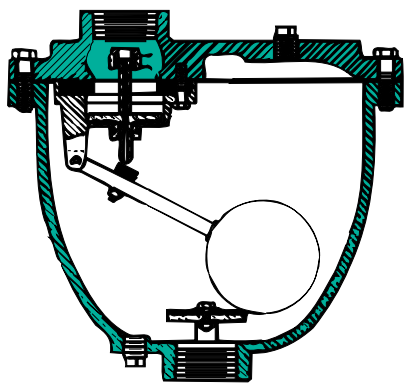
7. For other pipe materials or thickness consult pipe manufacturer for pipe collapsing pressure.
8. Determine the smallest valve size capable of admitting the required air in CFS (as found in step 5) without exceeding the collapsing pressure (as found in step 6) or 5 psi, whichever is less. Do not exceed a pressure differential greater than 5 psi.
9. Finally compare the valve size determined in step 4 with the valve size determined in steps 5 or 6. If they differ, always select the larger valve size.
10. Cla-Val has available upon request, a Slide Rule Air Valve Calculator. It will greatly reduce the amount of time necessary to size valves for pipeline service.
11. Valve effectiveness is affected by location in piping system. The Series 36 Combination Air Release and Vacuum Valves should be installed at all high points or changes in grade in a pipeline system. They should also be installed in high points where air will tend to accumulate during normal pressurized operation. For more information, see "Sizing Guide for Model 34 Air Release Valves" Data Sheet.





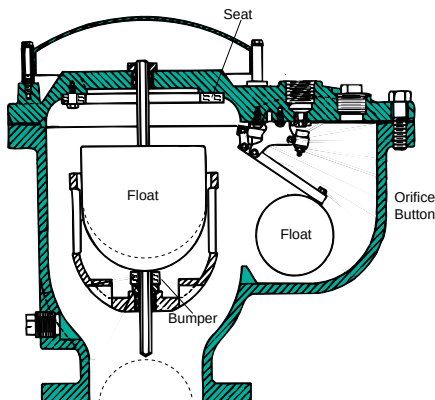
COMBINATION AIR RELEASE AND VACUUM VALVES

Single Body Style



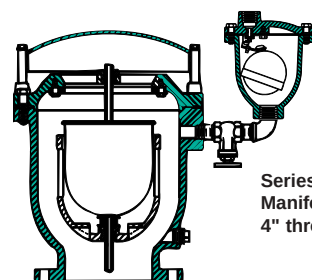
Series 36
1" through 4"

Single Body Style



Series 36
6" through 8"

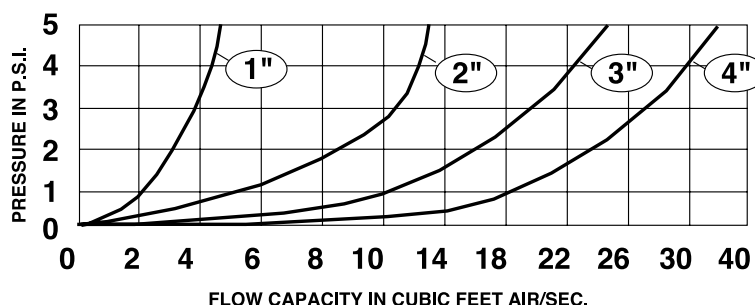
Dual Body Style



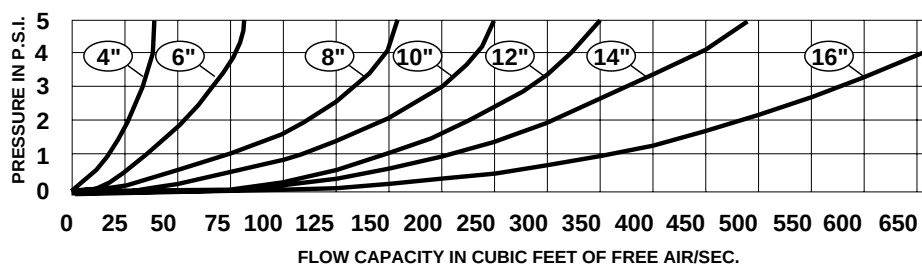
Series 36 MTP Type
Manifold Design
4" through 16"

Large Orifice Inlet x Outlet Inches	Small Orifice Diameter	Max W.P.	Height	Width	Wt. Lbs
1 X 1	5/64"	300 psi	10 1/2"	11 3/8"	40
1 X 1	5/64"	300 psi	10 1/2"	11 3/8"	40
2 X 2	3/32"	300 psi	13"	14"	71
3 x 3	3/32"	300 psi	17"	16"	112
4 X 4	3/32"	300 psi	19"	18 1/2"	170

*Bronze trim at reduced cost



Model No.	Large Orifice Inlet x Outlet Inches	Small Orifice Diameter	Max W.P.	Height	Width	Wt. Lbs
366-CAV038	6 x 6	3/8"	150 psi	20 1/4"	21"	225
366-CAV732.3	6 x 6	7/32"	300 psi	20 1/4"	21"	225
368-CAV038	8 x 8	3/8"	150 psi	23 1/2"	25"	320
368-CAV732.3	8 x 8	7/32"	300 psi	23 1/2"	25"	320



Model No.		Large Orifice Inlet/Outlet Inches	Small Orifice Inches		Inches		Weight lbs.	
125	250		125	250	Height	Width	125	250
MTP364/34.332	MTP364/34.116.3	4 x 4	3/32	1/16	21	20	125	132
MTP366/34.332	MTP366/34.116.3	6 x 6	3/32	1/16	21	20	175	195
MTP368/34.332	MTP368/34.116.3	8 x 8	3/32	1/16	21	20	226	255
MTP3610/34.332	MTP3610/34.116.	10 x 10	3/32	1/16	21	20	385	425
MTP3612/34.332	3	12 x 12	3/32	1/16	21	20	580	625
MTP3614/34.332	MTP3612/34.116.	14 x 14	3/32	1/16	21	20	685	750
MTP3616/34.332	3	16 x 16	3/32	1/16	21	20	875	985

For sizing assistance, see sizing guide or request a Cla-Val Air Valve Slide rule Calculator.