


VALVES

for water works systems

The Global Leader in Automatic Safety Valves





We have encountered and prevailed over innumerable challenges and obstacles.



CEO MESSAGE

We have encountered and prevailed over innumerable challenges and obstacles.

Since its establishment in 2016, our company has grown into the global manufacturing company by successfully diversifying from Desalination plant into Power plant, Petrochemical plant and Agriculture plant. Until now, we have encountered and prevailed over innumerable challenges and obstacles.

We wish our company to be a global company that we have not only want to play a pivotal role in our safety valves industry economic development but also have become a responsible global corporate contributing to the sustainable development of the world industry.

The key to our success lies in our business philosophy characterized by creative wisdom, positive thinking, and unwavering drive.

Ready to tackle fresh challenges and determined to reinvent ourselves through innovation, we will redouble our efforts to further enhance our position by strengthening our core businesses and consolidating our presence in international markets. With a clear vision into the future, we will deliver greater value to both our clients with continued focus on technology innovation, internal harmony, and cooperation.

We would like to take this opportunity to thank you for your support.

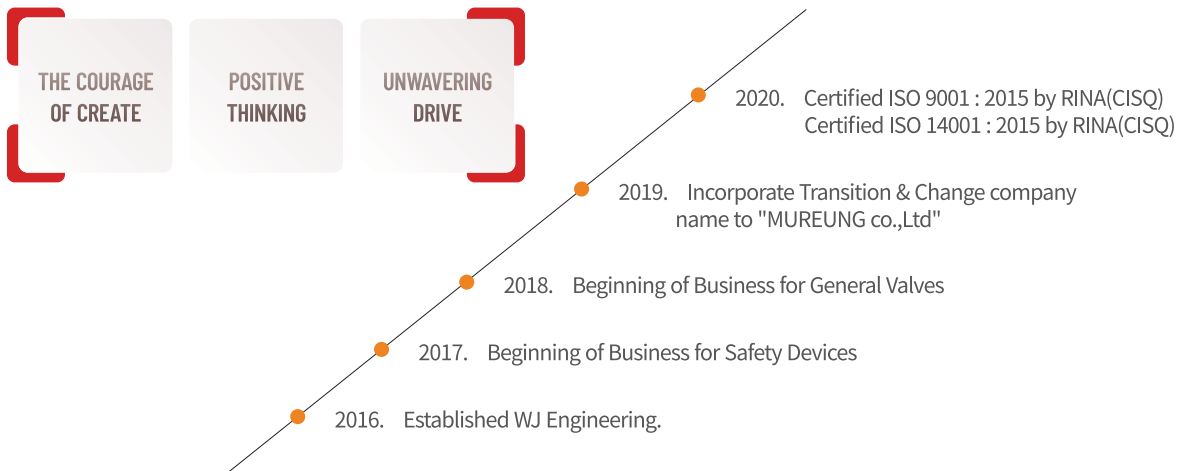
We pledge our unrelenting efforts in pursuit of fulfilling our responsibilities as the global safety valves company in the world industries sector.

MUREUNG Co.,Ltd.

The Global Leader in Automatic Safety Valves



HISTORY



Outlined of Waterworks Products

Air/Vacuum Valves are hydrochemical devices designed to automatically release or admit air during the filling, draining, or operation of a water pipeline or system. The safe operation and efficiency of a pipeline are dependent on the continual removal of air from the pipeline. Water contains at least 2 percent dissolved air by volume in standard conditions (14.7 psia & 60°F)(Dean, 1992) but can contain more, depending on the water pressure and temperature within the pipeline. When water is pressurized, its capacity to hold air is greatly magnified.

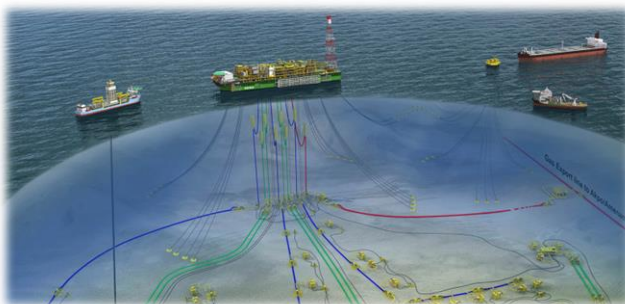


<Desalination Plant at Jeddah, KSA>

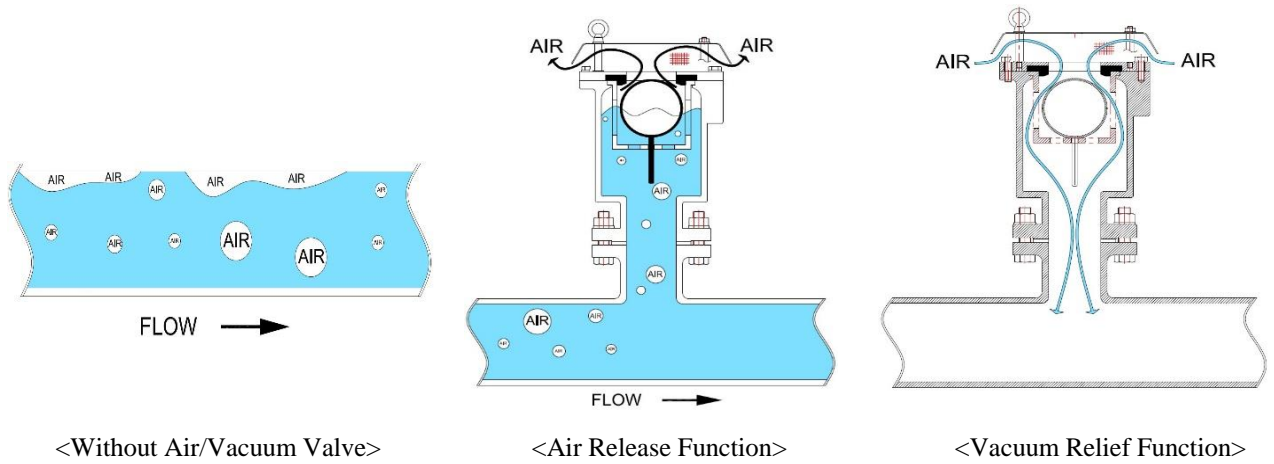
An Air Pocket may reduce the flow of water in a pipeline by reducing the cross-sectional flow area of the pipeline and may, If the volume of the air pocket is sufficient, completely air bind the pipeline and stop the flow of water.(Karassik, 2001)

Air pockets may also contribute to water hammer problems, pipeline breaks, pipeline noise, and pipeline corrosion, and can cause erratic operation of control valves, meters, and equipment.

Air comes out of solution in a pipeline because of low-pressure zones created by partially open valves, cascading flow in a partially filled pipe, variations in flow velocity caused by changing pipe diameters and slopes, and changes in pipeline elevation.



<FPSO for EGINA Off-shore plant>

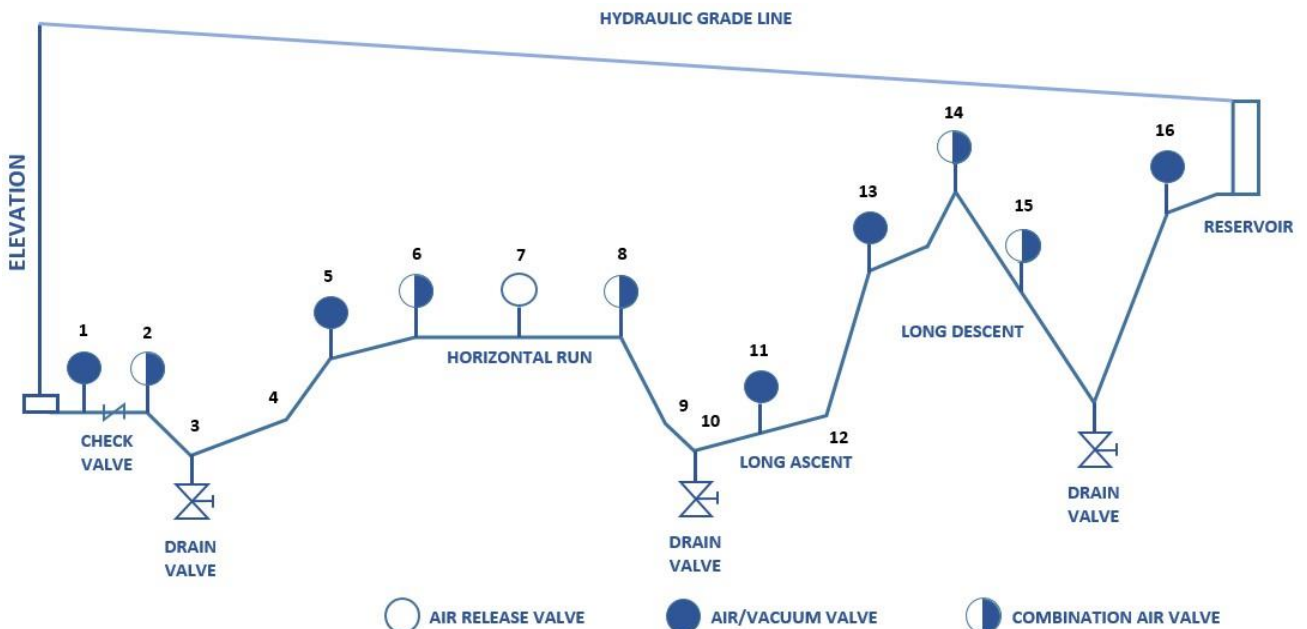


Air valves perform two important functions in a piping system. They maintain system design efficiency and provide system protection. System efficiency is maintained by venting air via the air valves from the system that can restrict flow and increase pumping costs.

Protection is provided by exhausting and admitting air through the air valves during system operations including start-up, shutdown, and critical conditions such as power failures or line breaks. The exhausting and admitting of air during these conditions will reduce the potential for destructive surges and water hammer normally associated with uncontrolled air or a vacuum condition within the piping system.

Locating Air Valves Along a Pipeline

The proper location of Waterworks Products is as important as the proper size of the valve. An improper location can render the valve ineffective. The following guidelines are recommended for the general location and corresponding types of waterworks products. However, there may be other locations where valves may be deemed necessary.



No.	Description	Recommended Types	No.	Description	Recommended Types
1	Pump Discharge	Air/Vacuum Valve	9	Decr. Downslope	No Valve Required
2	Incr. Downslope	Combination Air Valve	10	Low Point	No Valve Required
3	Low Point	No Valve Required	11	Long Ascent	Air/Vac or Combination
4	Incr. Upslope	No Valve Required	12	Incr. Upslope	No Valve Required
5	Decr. Upslope	Air/Vac or Combination	13	Decr. Upslope	Air/Vac or Combination
6	Beg. Horiz.	Combination Air Valve	14	High Point	Combination Air Valve
7	Horizontal	Air-Release or Combination	15	Long Descent	Air-Release or Combination
8	End Horiz.	Combination Air Valve	16	Decr. Upslope	Air/Vac or Combination

A sample pipeline profile illustrating typical valve locations is shown in as above. The horizontal axis is the running length of the pipeline, usually expressed in station points. Station points are often expressed in hundreds of feet, such as 145+32, which is equivalent to 14,532 feet. The vertical axis is the elevation of the profile stations relative to a specified horizontal datum.

Air valves are typically used in transmission pipelines where raw water is being transported to a treatment plant or where finished water is transported to a distribution system, or similar applications. Air valves may not be needed on smaller piping in distribution system piping grids where hydrants and service connections provide means for venting trapped air. Hydrants may also provide a means for venting pipelines for drainage. Experience has shown that hydrants and service connections can provide sufficient removal of air in terms of both performance and cost.





Air Release Valves, also called small orifice valves, are designed to automatically release small pockets of accumulated air from a pipeline while the system operates under pressure exceeding atmospheric pressure.

This MAL type products describes 1/2-in.(13-mm) through 6-in.(150-mm) for flanges of air release valves and The valves are designed for use in water systems with maximum working pressures of 300 psig(2,070 kPa [gauge]) and water temperatures ranging from above freezing to maximum of 125°F(52°C). - AWWA C512/AWWA M51

Description

A hydromechanical device designed to automatically release to the atmosphere small pockets of air as they accumulate at local high points along a pipeline when the pipeline or piping system is full and operating under-pressure.

Benefits

- Increase efficiency of water transport in a piping
- Prevent water from overflowing
- Pressure relief in a piping
- Drain small air pocket from piping
- Easily cleaning the Inside of air valve

Dimension

Small orifice :	From 1/16-in (1.6-mm)	To 1-in (25-mm)
Flange :	From 1/2-in (13-mm)	To 6-in (150-mm)

- ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B148-C95800
2	Seat	A216-WCB	A351-CF8M	B148-C95800
3	Float	316SS	316SS	MONEL 400
4	Holder	316SS	316SS	S31803
5	Discharge Pipe	316SS	316SS	316SS

- Hastelloy, Duplex series, incoloy series can available on request.



Air/Vacuum Valves, also called large orifice valves, are designed to exhaust large quantities of air automatically during pipeline filling and to admit large quantities of air automatically when the internal pressure in the pipeline drops below atmospheric pressure.

This MAV type products describes 1/2-in.(13-mm) through 30-in.(750-mm) for flanges/orifice of air/vacuum valves and The valves are designed for use in water systems with maximum working pressures of 300 psig (2,070 kPa [gauge]) and water temperatures ranging from above freezing to maximum of 125°F(52°C). - AWWA C512/AWWA M51

Description

The operation of an air/vacuum valve is similar to the air release valve except that the orifice diameter is considerably larger and will not open under pressure. An air/vacuum valve is normally open and is designed to vent large quantities of air through the orifice. As water enters the valve during filling of the system, the float will rise closing the orifice. Air/vacuum valves once closed **WILL NOT REOPEN TO VENT AIR** while the pipeline is operating under pressure exceeding atmospheric pressure or if water is present.

Benefits

- Pressure & Vacuum relief in a water piping system
- High capacity Venting & Vacuum relief for piping system protection
- Increase efficiency of water transport in a piping
- Prevent overflowing
- Easily cleaning the Inside of air/vacuum valve

Dimension

Large orifice :	From 1/2-in (13-mm)	To 30-in (750-mm)
Flange :	From 1/2-in (13-mm)	To 30-in (750-mm)

- ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B148-C95800
2	Seat	A216-WCB	A351-CF8M	B148-C95800
3	Float	316SS	316SS	MONEL 400
4	Float Cover	A351-CF8M	A351-CF8M	B148-C95800
5	Gasket	NBR	NBR	NBR

- Hastelloy, Duplex series, incoloy series can available on request.



Combination Air/Vacuum Valves are designed to perform the same function as air/vacuum valves but, in addition, they will automatically release small pockets of air from the pipeline while under pressure like an air release valve. Combination air valves can be supplied in a single body type.

This MCAV type products describes 1/2-in.(13-mm) through 30-in.(750-mm) for flanges/Large orifice of air/vacuum valves and 1/16-in (1.6-mm) through 1-in (25-mm) for small orifice of air release valve.

- AWWA C512/AWWA M51

Description

Combination Air/vacuum valves should be installed at pipeline high points, draining side of mainline, increased downslope, decreased upslope, ascending sections, descending sections & at the beginning and end of long horizontal sections to provide venting while the pipeline is filling, during, normal operation of the pipeline, and for air inflow and vacuum protection while the pipe is draining. A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it.

Benefits

- Pressure & Vacuum relief in a water piping system
- High capacity Venting & Vacuum relief for piping system protection
- Drain small air pockets from piping
- Increase efficiency of water transport in a piping
- Prevent overflowing
- Easily cleaning the inside of air valve

Dimension

Small orifice :	From 1/16-in (1.6-mm)	To 1-in (25-mm)
Large orifice :	From 1/2-in (13-mm)	To 30-in (750-mm)
Flange :	From 1/2-in (13-mm)	To 30-in (750-mm)

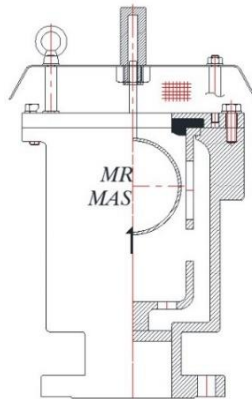
- ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B148-C95800
2	Seat	A216-WCB	A351-CF8M	B148-C95800
3	Float	316SS	316SS	MONEL 400
4	Float Cover	A351-CF8M	A351-CF8M	B148-C95800
5	Gasket	NBR	NBR	NBR

Air Release Valve for Small Orifice : Same as MAL type materials

- Hastelloy, Duplex series, incoloy series can available on request.



Air/Vacuum valve with Surge Check valves are designed to exhaust large quantities of air automatically during pipeline filling and to admit large quantities of air automatically when the internal pressure in the pipeline drops below atmospheric pressure. In addition, Surge Check disc where located in the bottom of the valve inside will prevent the water hammer and vortex phenomena to protect the piping system.

Description

This valve is a convergence type developed products that combines the Surge Check Valve with Air/Vacuum Valve. MAS type have been developed that it's performed at 10 divided sections each pressure in accordance with each working pressure because the product that exists various working pressure. This product did not exist in the existing market and is expected to create a new paradigm and become a new vital part of the stagnant water works system. - AWWA C512/AWWA M51

Benefits

- Pressure & Vacuum relief in a water piping system
- Prevent Water hammer & Vortex phenomena
- High capacity Venting & Vacuum relief for piping system protection
- Increase efficiency of water transport in a piping
- Prevent overflowing
- Easily cleaning the inside of air valve

Dimension

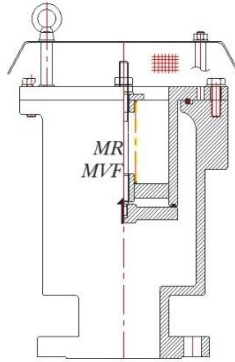
Small orifice :	From 1/16-in (1.6-mm)	To 1-in (25-mm)
Large orifice :	From 1/2-in (13-mm)	To 30-in (750-mm)
Flange :	From 1/2-in (13-mm)	To 30-in (750-mm)

- ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B148-C95800
2	Seat	A216-WCB	A351-CF8M	B148-C95800
3	Float	316SS	316SS	MONEL 400
4	Float Cover	A351-CF8M	A351-CF8M	B148-C95800
5	Gasket	NBR	NBR	NBR
6	Surge Disc	A351-CF8M	A351-CF8M	B148-C95800
7	Spring	316SS	316SS	INCONEL X750

- Hastelloy, Duplex series, incoloy series can available on request.



For critical applications where vacuum protection is a must or water column separation is predicted, a vacuum relief valve is used. The vacuum Relief Valve is mounted at critical pipeline high points, penstocks, or tanks and allows for rapid inflow of atmospheric air to reduce vacuum conditions in piping systems.

Description

The vacuum relief valves 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 re-joining of the water column. In this manner severe pressure surge/water hammer is prevented as the system returns to normal operation.

Benefits

- Vacuum Relief for piping system
- Prevent Water Hammer & Vortex Phenomena
- Prevent overflowing
- Increase efficiency of water transport in a piping
- Easily cleaning the inside of air valve

Dimension

Large orifice :	From 1-in (25-mm)	To 12-in (300-mm)
Flange :	From 1/2-in (13-mm)	To 12-in (300-mm)

- ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

Set Vacuum

- Minimum 150 mmH₂O (0.213 psig, 0.015 kg/cm²) / Maximum 9000 mmH₂O (12.8 psig, 0.9 kg/cm²)

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B148-C95800
2	Seat	A216-WCB	A351-CF8M	B148-C95800
3	Disc	316SS	316SS	MONEL 400
4	Spring	316SS	316SS	INCONEL X750
5	O-ring	NBR	NBR	NBR

- Hastelloy, Duplex series, incoloy series can available on request.



Closed vessels or tanks filled with liquids must have an opening through which the accumulated pressure can be released and vacuum in the tank or vessel compensated. For that purpose MR's Overpressure and Vacuum Relief Valves are provided with weight-loaded or spring-loaded valve discs. In the case of overpressure in the tank, the overpressure valve disc guided in the housing is lifted and releases the volume flow into the atmosphere. When there is a vacuum in the tank, the overpressure of the atmosphere lifts the vacuum disc and the tank is vented.

EN 13463-1 / EN 13463-5 / API 2000

Description

MR's Pressure/Vacuum Relief Valves are ideal for routine service for vent-to-atmosphere applications. This valve provides protection against positive or vacuum overpressure, and prevents air intake and evaporative losses of product while helping to contain odorous and potentially explosive vapors.

Benefits

- Minimization of product loss
- Replaceable seat
- Reduction of emissions
- Excellent flow characteristics
- Maintenance of pressure up to just below the maximum permissible (tank) pressure

Specification

Size :	From 1 1/2" (ND 40A)	To 12" (ND 300A)
Pressure Range :	From 22 mmH2O	To 10000 mmH2O
Vacuum Range :	From 22 mmH2O	To 8400 mmH2O

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B26-319
2	Cover	A283-C	A351-CF8M	B26-319
3	Disc	A240-304	A240-316	A240-304
4	Seal	TEFLON	TEFLON	TEFLON
5	Seat	A351-CF8	A351-CF8M	A351-CF8

- Special materials can available upon request.



The deflagration flame arrester is symmetrical and offers bidirectional flame transmission protection. The number of Flame Elements and their gap size depends on the arrester's intended use.

Specifying the operating conditions, such as the temperature, pressure, explosion group, and the composition of the fluid, enables MF21 to select the best deflagration flame arrester for your application.

Our deflagration flame arresters is available for substances of explosion groups IIA and IIB3 (NEC groups D and C (MESG \geq 0.65 mm)).

EN ISO 16852 / API 2000

Description

A flame arrester functions by absorbing the heat from a flame front traveling at subsonic velocities, thus dropping the burning gas/air mixture below its auto-ignition temperature; consequently, the flame cannot survive. The heat is absorbed through channels (passages) designed into an element. These channels are chosen and measured as the MESG (maximum experimental safe gap) of the gas for a particular installation. On a fuel storage vent, flame arresters also serve a secondary purpose of allowing air pressure to equalize inside the tank when fuel is added or removed, while also preventing insects from flying or crawling into the vent piping and fouling the fuel in the tanks and pipes.

In-line / End-line type & also Detonation type is available.

Benefits

- Bi-directional flame transmission proof design
- Lowest pressure drop results in low operating and life cycle costs
- Protects with deflagrations for explosion groups IIA & IIB (NEC groups D & C)
- Optimized flow capacity
- Easier cleaning

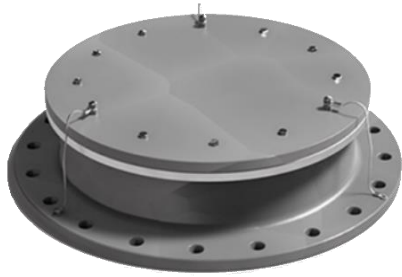
Specification

Size :	From 1" (ND 25A)	To 40-in (ND 1000A)
MESG :	less than 0.5mm	To higher than 0.9mm

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	B26-319
2	Element Ring	A240-304	A240-316	A240-304
3	Element Pad	A240-304	A240-316	A240-304
4	Element	A240-316	A240-316	A240-316
5	Lug	A240-304	A240-316	A240-304

- Special materials can available upon request.



MU REUNG's ME30A/B Emergency Vent and Manhole Cover is an economical solution to present day emergency venting requirements. It is designed to relieve excessive internal pressure in liquid storage tanks. Its economical price provides excellent protection against costly tank roof rupture repair.
API 2000 / API 650

Description

The MR's Emergency Vent Cover is designed to provide an emergency pressure relief opening for storage tanks when exposed to over pressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. Quick and easy access for tank inspection and maintenance is also provided. The MR's emergency pressure relief vent provides pressure relief & vacuum relief.

Benefits

- Easy installation, convenient handling
- Aluminium, Carbon Steel & Stainless Steel
- High capacity Venting & Vacuum relief for storage tank protection
- Optimized flow capacity

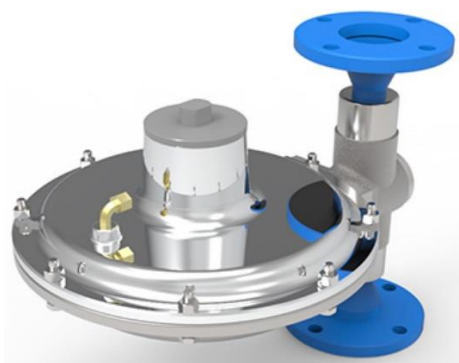
Specification

Size :	From 16" (ND 400A)	To 24" (ND 600A)
Type :	Weight Loaded type & Spring Loaded type	
Set Pressure :	From 100 mmH2O	To 700 mmH2O
Flange :	API650, ASME B16.5 for 150# or KS/JIS5K/10K	

Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A216-WCB	A351-CF8M	A995-4A
2	Cover	A240-304	A240-316	S31803
3	Diaphragm	TEFLON	TEFLON	TEFLON
4	Cover pad	A240-304	A240-316	S31803
5	Guide	304SS	316SS	316SS

- Special materials can available upon request.



Control device to maintain a constant pressure state by injecting N2 gas, that is, inert gas to upper room of the tank.

The NB2L series ensure that the gas pressure of storage tank remained constant & prevent vacuum state when it has removing liquid in the storage tank or the temperature going down. Also N2 gas will be supplied in order to maintain pressure.

Description

The NB2L is a direct-acting valve using a single over-sized diaphragm actuator. The over-sized diaphragm actuator provide high sensitivity to change in storage tank pressure, which is increasing the accuracy.

The NB2L is fully balanced under all operating circumstances. This advantages make it possible to operate reliably with any inlet-pressure. And also the setting pressure is easily controlled by a single adjusting screw.

Benefits

- reduces evaporation loss of the products to minimize the formation of vapor in the tank
- removes explosive factors by controlling hazardous gas ingredients from vapor space in the tank
- prevents products from damage by infl ow of unnecessary moisture and air
- prevents explosion by controlling electrostatic spark
- promotes delivery rate of product by decreasing of discharging time of product
- prevents the modification of tank by controlling vacuum in the tank

Specification

Size :	From 1/2" (ND 15A)	To 2" (ND 50A)
Max Inlet Pressure :	10 kgf/cm2	
Setting Pressure :	From 20 mmH2O	To 500 mmH2O
Max Flow Capacity :	26700 SCFH	

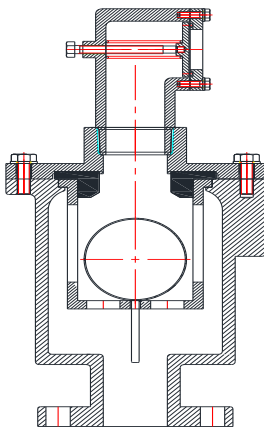
Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A351-CF8	A351-CF8M	B26-319
2	Cover	B26-319	B26-319	B26-319
3	Orifice	A240-304	A240-316	A240-304
4	Disc	A240-304	A240-316	A240-304
5	Diaphragm	TEFLON	TEFLON	TEFLON

MAT type-Air Release Valve c/w Throttling Device



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Air Release Valve c/w Throttling Devices, also called large orifice valves c/w Throttling Air Control Devices, are designed to exhaust large quantities of air automatically or manually during pipeline filling and to admit large quantities of air when the internal pressure in the pipe-line drops below atmospheric pressure. Also anybody can control the Air flow capacity using the adjust bolt easily. This MAT type products describes 1-in.(25-mm) through 4-in.(100-mm) for flanges & threaded type. The valves are designed for use in water systems with maximum working pressures of 300 psig(2,070 kPa [gauge]) and water temperatures ranging from above freezing to maximum of 180°F(82°C). - AWWA C512/AWWA M51

◆ Description

A hydromechanical device designed to automatically or manually release to the atmosphere air pockets as they accumulate at local high points along a pipeline when the pipeline or piping system is full and operating under pressure.

◆ Benefits

- Increase efficiency of water transport in a piping
- Prevent overflowing
- Pressure & Vacuum relief in a water piping system
- High capacity venting & Vacuum relief for protection of piping system
- Easy cleaning the Inside of valve

◆ Dimension

Large orifice :	From 1-in (25-mm)	To 4-in (100-mm)
Flange :	From 1-in (25-mm)	To 4-in (100-mm)

* ANSI, NPT, PT flange connection is available. Other flanges are to be discussed with technical sales person.

◆ Materials

No.	Descriptions	Spec. 1	Spec. 2	Spec. 3
1	Body	A351-CF8M	A995-5A	B148-C95800
2	Seat	A351-CF8M	A995-5A	B148-C95800
3	Float	316SS	S32750	MONEL 400
4	Gasket	NBR	NBR	NBR
5	Throttling Pipe	A351-CF8M	A995-5A	B148-C95800

* Hastelloy, Duplex series, incoloy series can available on request.

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