

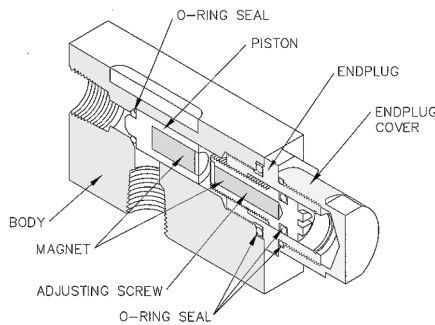
# Safety Excess Flow Valves



The M-VF Series Safety Excess Flow Valves are engineered for fast automatic shut-off in case of line, hose, or fitting failure protecting plant, personnel, and instruments. Designed for protection of systems handling corrosive, toxic, radioactive, and flammable materials; the valve will instantly detect surges in the system and stop fluid flow. When the break is repaired and pressure equalized in the system, the valve will open to allow the fluid to flow through the system. The M-VF Series operates effectively with all fluids, liquids, or gases.

## Operation For Standard Models

As the fluid (liquid or gas) enters the valve, the pressure differential across the piston creates a venturi effect, accelerating the flow through the valve. At a preset flow rate, when the differential exceeds the magnetic attraction between the piston magnet and the adjusting screw magnet, the piston travels instantaneously over towards the output port, thereby shutting off the flow. When the pressure is equalized between both sides of the valve, the piston automatically returns to its previously adjusted flow set-point. The shut off set point is field adjustable and this is achieved by turning the adjusting screw.



*Illustrated is the M-VF Model with 1/4" ports.*

In the case of positive shut-off models, an elastomer o-ring fitted on the nose of the piston completely shuts off the flow once it rests on the seat and results in bubble tight closure. For resetting, bleed the upstream line to atmosphere to equalize the pressure as specified in the Installation Section.

In the case of the automatic reset model (controlled bleed), there is a controlled bleed as there is no o-ring present between the piston and the valve seat. When the flow of medium is turned off at the source, this controlled bleed permits equalization on the two sides, and the piston travels back to its original position.

## M-VF Series (Standard Version)

**Prevents uncontrolled flows of corrosive and non-corrosive fluids**

### Features

- High reliability
- Field adjustable
- Exceeds OSHA requirements for safety shut-off valves
- Low pressure drop
- All mechanical
- Right-angle flow

### Applications

- Compressed air and gas systems
- Pollution control
- Leak detection
- Gas analyzers
- Hydraulic lines
- Sampling station operator protection
- Regulator protection
- Catastrophic failure protection

### Calibration Range \*

Air: 0.0177 - 130 scfm  
Water: 0.0026 - 20 gpm

\* These ranges are over different valve sizes.

### Specifications

Set Point Accuracy:  $\pm 10\%$  maximum  
Repeatability:  $\pm 3\%$

### Material Versions

- Brass
- 316 Stainless Steel

### Port Sizes

- 1/8" FNPT
- 1/4" FNPT
- 3/8" FNPT
- 1/2" FNPT
- 3/4" FNPT

# M-VF Series (Standard Version)

## Installation and Flow Rate Adjustment

1. The preferred mounting orientation for the valve is in the horizontal position, although it can be mounted vertically.
2. Turn the adjusting screw fully counter-clockwise.
3. Connect hose or piping to outlet and operate at maximum flow rate (liquid or gas).
4. Turn the adjusting screw clockwise until the valve actuates and shuts off flow.
5. Turn the flow off. The valve will automatically reset because of its controlled bleed. For positive shut-off models, equalize the pressure on both sides of the valve. The valve will reset as the pressure is equalized and automatically return to its previously adjusted flow setting.
6. Turn the adjusting screw (one turn) counter-clockwise and system is ready to function.

Note: In high pressure environments, step 4 may need to be done iteratively under no flow conditions, after which flow can be resumed to test for valve actuation.

## Maintenance

It is beneficial to have adequate filtration in the system prior to the valve as otherwise, its functioning may be hampered by large particles interfering with the travel of the piston. Using an adjustable wrench, gently remove the end-plug from the valve body. Examine the piston, the o-rings, and the surfaces of the valve bore and clean with trichloroethene if necessary, prior to reassembling (Replacement parts are available on request).

Adequate sealing methods must be used at all connections to the valve to prevent leakage.

## Standard Specifications by Materials

<b>Housing, End Plug, &amp; Adjusting Screw</b>	Brass	316SS*
<b>Magnets in Adjusting Screw &amp; Pistons</b>	Alnico 5	
<b>O- Rings</b>	Viton	
<b>Piston</b>	316SS	316SS
<b>Pressure and Temperature Specifications</b>		
Maximum Operating (psig)	1500	3000
Burst (psig)	3000	5000
Maximum Operating Temperature	149 C (300°F)	149 C (300°F)

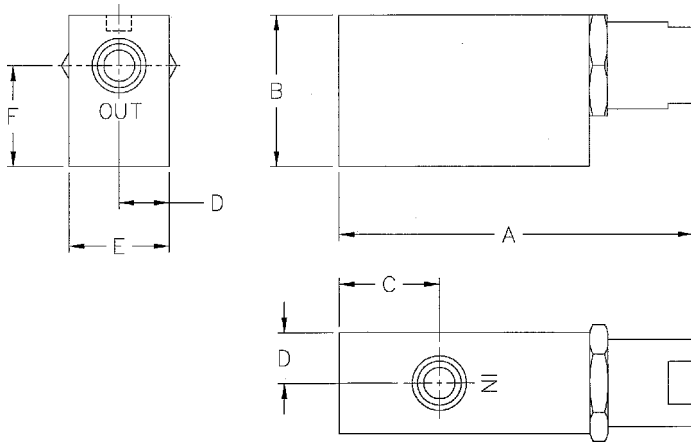
\* Note for the 316SS valve. Piston and adjusting screw with embedded magnets using beam-welded plugs. No epoxy in wetted area.

## Flow Range Table

Port Size (FNPT)	Shut Off Range (Air/scfm)	Shut Off Range (Water/gpm)
1/8"	0.0177 - 5	0.00264 - 0.8
1/4"	0.12 - 35	0.0264 - 3.5
3/8"	3 - 60	0.1 - 4
1/2"	5 - 75	0.5 - 10
3/4"	15 - 130	1.0 - 20

# Safety Excess Flow Valves

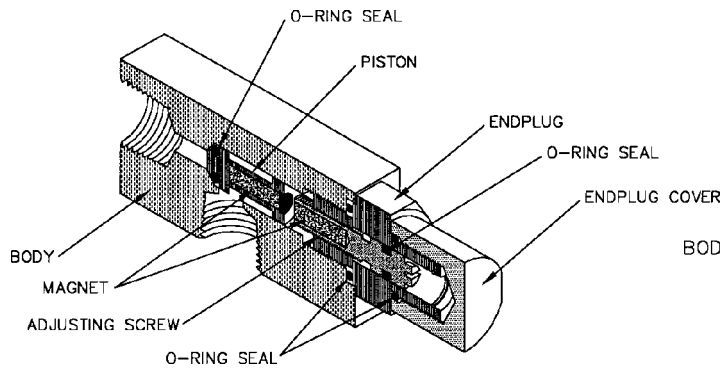
## Dimensional Drawing



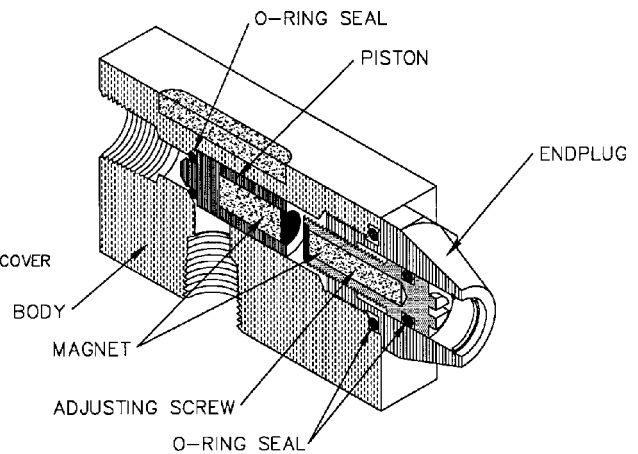
		Port Size				
		1/8"	1/4"	3/8"	1/2"	3/4"
"A"	IN	2-7/8	3-1/2	3-1/2	4-3/4	5-3/4
	MM	73.03	88.90	88.90	120.65	146.05
"B"	IN	1-1/4	1-1/2	1-1/2	2	2-1/4
	MM	31.75	38.1	38.1	50.8	57.15
"C"	IN	1-1/16	1	1	1-1/4	1-5/8
	MM	17.46	25.4	25.4	31.75	41.28
"D"	IN	3/8	1/2	1/2	5/8	5/8
	MM	9.53	12.7	12.7	15.88	15.88
"E"	IN	3/4	1	1	1-1/4	1-1/4
	MM	19.05	25.4	25.4	31.75	31.75
"F"	IN	5/8	1	1	1-3/8	1-5/8
	MM	15.88	25.4	25.4	34.93	41.28

## Cut-Away Drawings

*Illustrated is the Standard M-VF Model with 1/8" ports.*



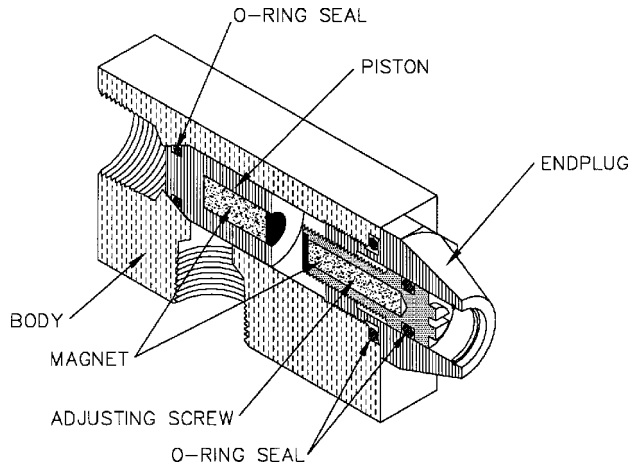
*Illustrated is the Standard M-VF Model with 1/4" ports.*



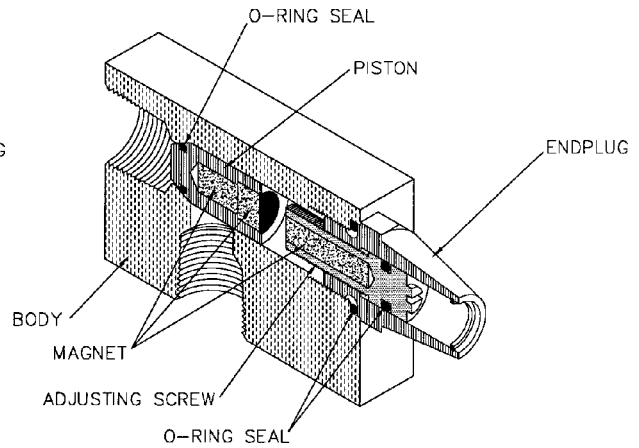
# M-VF Series (Standard Version)

## Cut-Away Drawings

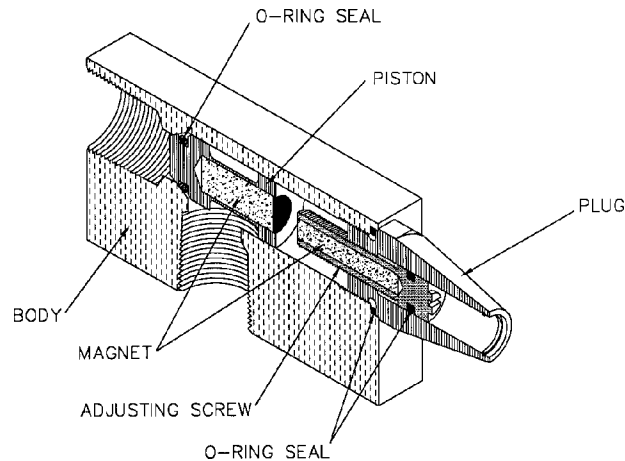
Illustrated is the Standard M-VF Model with 3/8" ports.



Illustrated is the Standard M-VF Model with 1/2" ports.



Illustrated is the Standard M-VF Model with 3/4" ports.



## Ordering Information

Standard Part Numbering					Options					
M	-	Model	-	Material	Port	Shutoff	-	Reset	Piston	Seals
M	-	VF	-	S	1	1	-	0	0	1
		VF		B - Brass S - 316 Stainless	1 - 1/8" 2 - 1/4" 3 - 3/8" 4 - 1/2" 6 - 3/4"	1 - Positive shut off 2 - Bleed		0 - Standard (no bleed) 1 - Bleed to atmosphere 2 - Bleed to Sample Container through barbed tube 3 - Intrinsic Reset	0 - Standard (316SS with epoxy) 1 - All 316 SS ( no epoxy)	0 - Standard(Viton®) 1 - Kalrez® 4 - Silicon 5 - EPDM 6 - Butyl 7 - Nitrile

\* For information about the M-VF with the "Reset" option, please see page 6 of this catalog.

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