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# Instruction Manual

## IMPORTANT

Record your valve model number  
and serial number here for easy  
reference:

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date of Purchase \_\_\_\_\_

When ordering parts or making  
inquires about this valve, please  
mention the model and serial

## Back Pressure Valves Pressure Relief Valves

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## INTRODUCTION

Diaphragm back pressure valves are used to enhance the performance of chemical feed pumps and systems by providing a constant discharge head pressure. These valves also function as an anti-siphon valve. The diaphragm is held against the seat by the internal spring. Back pressure is adjustable from 10 - 150 psi via the tamper resistant adjustment screw. When the inlet pressure exceeds the preset pressure the diaphragm lifts off the seat and the chemical flows to the injection point. After each discharge stroke of the pump, as the pressure drops, the diaphragm reseats itself.

Diaphragm pressure relief valves are designed to protect chemical feed pumps and systems from overpressure caused by defective equipment or blockages in the chemical line.

The 3 port design allows chemical to flow through the valve via an internal chamber. When the pressure in the chemical line exceeds the preset pressure of the valve the diaphragm lifts off the seat and the chemical then flows out the bottom port back to the chemical tank. Relief pressure is adjustable from 10 - 150 psi via the tamper resistant screw in the top of the valve.

## INSTALLATION

### Back Pressure Valve:

Generally, the back pressure valve can be installed anywhere in the discharge line, provided there is some downstream pressure at the dosage point. If there is no downstream pressure the back pressure valve should be installed at the dosage point to prevent siphoning and drainage of the chemical line. All valves are factory set at 50 psi, unless otherwise specified. Field adjustment is possible with the adjustment screw.

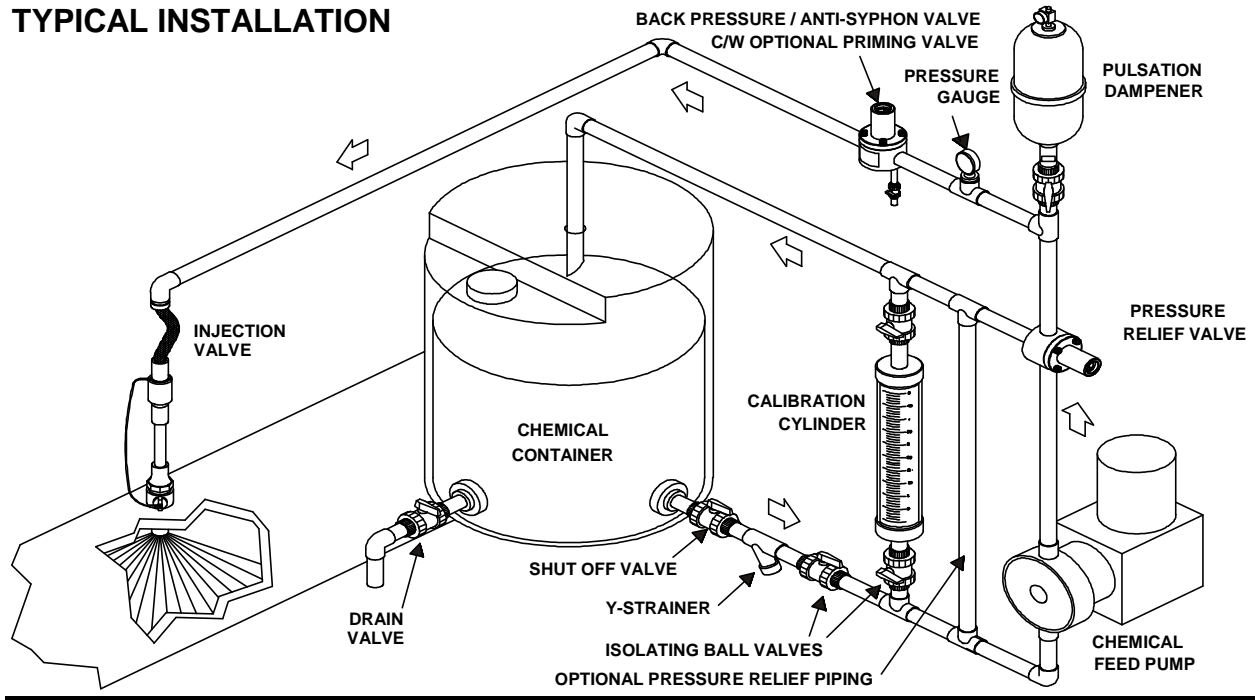
Back pressure valve performance will be enhanced with the installation of a pulsation dampener to smooth out the discharge / suction cycles of the pump. Thus, the diaphragm is free to float inside the valve chamber, minimizing the wear on the stress points of the diaphragm. For many low pressure applications dampeners without diaphragms are acceptable. These pulsation dampeners should be sized at 12 - 15 times the dosage volume of the pump head. For some applications diaphragm type dampeners are required. Generally speaking 5 to 10% dampening is sufficient.

### Pressure Relief Valve:

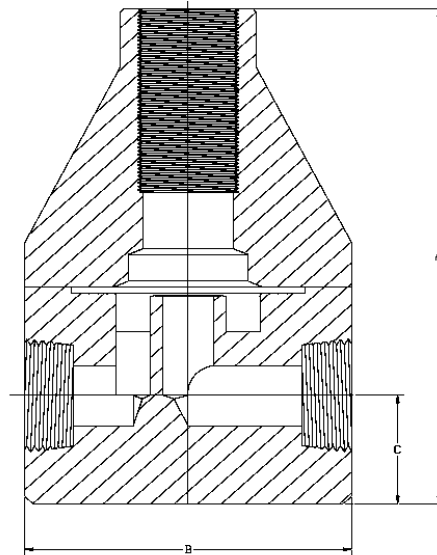
Installation should be made as close to the chemical pump discharge valve as possible, without any equipment, especially shut-off valves, between the valve and the pump. Direction of flow must be across the valve, however the side of entry is not important. All valves are factory set at 50 psi, however field adjustment is possible with the adjustment screw.

The optimum installation for the relief valve is to vent the relief port back to the chemical tank, or directly to a containment area. However if this is not possible, the relief port can be piped back into the suction side of the pump. This will apply the suction pressure to the relief port. To compensate, divide the suction pressure by 4 and add this pressure to the relief valve setting. Always test the relief valve under normal system operating conditions to ensure it is set properly.

## TYPICAL INSTALLATION



## DIMENSIONS:



D	A	B	C
1/4"	3.55	2.35	0.750
3/8"	3.55	2.35	0.750
1/2" M	4.25	2.35	0.750
1/2" G	5.56	3.50	1.125
3/4"	5.56	3.50	1.125
1"	5.86	3.50	1.250
1 1/2"	8.35	4.90	1.825
2"	8.90	4.90	2.15

## MAINTENANCE:

The pressure relief and back pressure valves were designed to minimize the amount of maintenance required to keep the valves in operation. However, periodic replacement of the diaphragm is required. To facilitate inspection and replacement, the valve layout is such that removal of the diaphragm can be done without taking the valve out of the chemical line.

**Caution: Ensure the system is not under pressure and that the chemical lines are flushed with water before disassembly.**

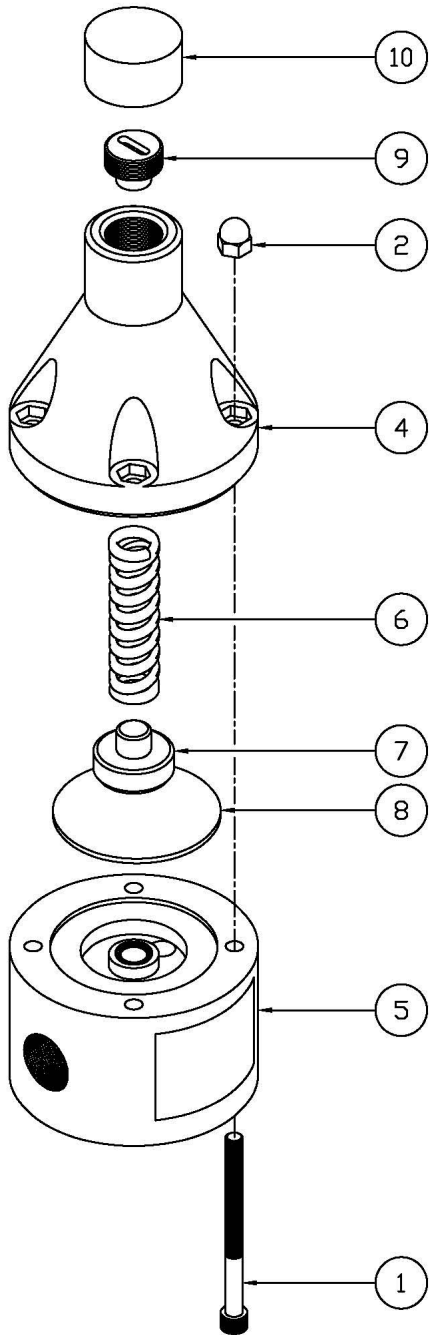
Unscrew the pressure adjustment screw to remove the pressure from the diaphragm. Remove the 4 bolts and lift off the valve top.

After the diaphragm and the valve seat have been inspected and replaced if necessary, (White PTFE side down), check the adjustment spring. Make sure there is no rust or corrosion. Place the support disc and the spring onto the valve body and slide the top back over the four bolts.

Tighten the 4 bolts and replace the adjustment screw. Turn the adjustment screw clockwise to approximately the same position as it was prior to disassembly. If an exact pressure setting is required or a different pressure is desired a pressure gauge should be used to verify the setting. Pressure can be increased by turning the pressure adjustment screw clockwise.

**NOTE: Dimensions are general. See dimension sheets for exact sizes of various material valves.**

# PARTS LIST



ITEM	DESCRIPTION	PART #
1	Bolt - 1/2" - 1" G-Series Plastic Valves - 1/4" - 20 x 2 3/4" Bolt - 1 1/2" - 4" Metal Valves - 5/16" - 18 x 1 1/2" Bolt - 1/4" x 20 x 4.5" - 1 1/2" Plastic Valves (5" OD Body) Bolt - 1 1/2" (OBS 4.5" OD) - 2" Plastic Valves 1/4" - 20 x 5" Bolt - 1/4" - 3/8" M-Series Plastic Valves - 10/32" x 1 3/4" Bolt - 1/4" - 1/2" M-Series Metal Valves - 10/32" x 3/4" Bolt - 1/2" - 1" G-Series Metal Valves - 1/4" - 20 x 1 1/4" Bolt - 1/2" M-Series Plastic Valves - 10/32" x 2 1/2"	PV-00101 PV-00102 PV-00104 PV-00105 PV-00106 PV-00107 PV-00108 PV-00113
2	Cap Hex nut - 10/32 for M-Series Plastic Valves Cap Hex nut - 1/4 - 20 for G-Series Plastic Valves	PV-00201 PV-00202
3	10/32 Flat washer - M-Series Metal Valves with 316 SS Top 1/4 Flat washer - G-Series Metal Valves with 316 SS Top 5/16 Flat washer - 1 1/2" - 2" Metal Valves with 316 SS Top	PV-00301 PV-00302 PV-00303
4	1/4" - 1/2" M-Series Valve Top - Noryl, Black 1/2" - External Adjustment Valve Top - PVC (Tiberian) 1/4" - 1/2" M-Series Alloy Valve Top - 316 SS 1/2" - 1" Valve Top - Noryl, Black 1/2" - 1" Valve Top - 316 SS 1 1/2" - 2" Valve Top; 5" Metal Valves, Noryl , Black 1 1/2" - 2" Valve Top; 5" Plastic Valves, Noryl , Black 1 1/2" - 2" Valve Top; 5" Valves. 316 SS	PV-004040 PV-004029 PV-00403 PV-004451 PV-00407 PV-004171 PV-004175 PV-00416
6	Pressure Spring - 1/4" - 1/2" M-Series Valve; 150 psi Pressure Spring - 1/4" - 1/2" M-Series Valve; 50 psi Pressure Spring - 1/4" - 1/2" M-Series Valve; 350 psi Pressure Spring - 1/4" - 1/2" M-Series Valve; 250 psi Pressure Spring - 1/2" - 1" G-Series Valve; 150 psi Pressure Spring - 1/2" - 1" G-Series Valve; 50 psi Pressure Spring - 1/2" - 1" G-Series Valve; 250 psi Pressure Spring - 1/2" - 1" G-Series Valve; 350 psi Pressure Spring - 1 1/2" - 2" Valve; 150 psi Pressure Spring - 1 1/2" - 2" Valve; 50 psi	PV-00601 PV-006011 PV-006012 PV-006013 PV-00602 PV-006021 PV-006023 PV-006122 PV-00603 PV-006033
7	Support Disc - 1/4" - 1/2" M-Series Valve, PVC Support Disc - 1/4" - 1/2" M-Series Valve, 316 SS Support Disc - 1/2" - 1" G-Series Valve, PVC Support Disc - 1/2" - 1" G-Series Valve, 316 SS Support Disc - 1 1/2" - 2" Valve, PVC Support Disc - 1 1/2" - 2" Valve, 316 SS	PV-00701 PV-00702 PV-00705 PV-00706 PV-00707 PV-00709
8	Diaphragm - 1/4" - 1/2" M-Series Valve - PTFE / EPDM Diaphragm - 1/4" - 1/2" M-Series Valve - Viton Diaphragm - 1/4" - 1/2" M-Series Valve - PTFE / Viton (High Temp) Diaphragm - 1/2" - 1" G-Series Valve - PTFE / EPDM Diaphragm - 1/2" - 1" G-Series Valve - Viton Diaphragm - 1/2" - 1" G-Series Valve - PTFE / Viton (High Temp) Diaphragm - 1 1/2" - PTFE/EPDM - (OBS 4.5" OD Body) Diaphragm - 1 1/2" - Viton - (OBS 4.5" OD Body) Diaphragm - 1 1/2" - PTFE/Viton - (OBS 4.5" OD Body) Diaphragm - 1 1/2" - 2" Valve - PTFE/EPDM (5" OD Body) Diaphragm - 1 1/2" - 2" Valve - Viton (5" OD Body)	PV-00800 PV-00802 PV-00803 PV-00810 PV-00812 PV-00813 PV-00820 PV-00821 PV-00822 PV-00830 PV-00831
9	Adjustment Screw - 1/4" - 1" Valve - PET Adjustment Screw - 1/4" - 1" Valve - Coated Steel Adjustment Screw - 1 1/2" - 2" Valve - PET Adjustment Screw - 1 1/2" - 2" Valve - Coated Steel	PV-00906 PV-00903 PV-00926 PV-00921
10	Protective Vinyl Cap - Small for G-Series with Standard Top Protective Vinyl Cap - Small for M-Series with 316SS Top Protective Vinyl Cap - X-Small for M-Series with Standard Top Protective Vinyl Cap - Medium for G-Series with 316SS Top Protective Vinyl Cap - Medium for 1 1/2" - 2" Valves w/Standard Top Protective Vinyl Cap - Large for 1 1/2" - 2" Valves w/ 316SS Top Protective Vinyl Cap - Large for 3" - 4" Valves w/ 316SS Top	PV-01001 PV-01001 PV-010011 PV-01002 PV-01002 PV-01003 PV-01003

ITEM	DESCRIPTION	BPV #	PRV #
5	1/4" M-Series Valve Body PVC 1/4" M-Series Valve Body PP 1/4" M-Series Valve Body PTFE 1/4" M-Series Valve Body PVDF 1/4" M-Series Valve Body 316 SS 1/4" M-Series Valve Body Alloy 20 1/4" M-Series Valve Body Hast C 1/4" M-Series Valve Body CPVC	BPM-00501 BPM-00502 BPM-00503 BPM-00504 BPM-00505 BPV-00506 BPV-00507 BPM-00508	PRM-00501 PRM-00502 PRM-00503 PRM-00504 PRM-00505 PRV-00506 PRV-00507 PRM-00508
	3/8" M-Series Valve Body PVC 3/8" M-Series Valve Body PP 3/8" M-Series Valve Body PTFE 3/8" M-Series Valve Body PVDF 3/8" M-Series Valve Body 316 SS 3/8" M-Series Valve Body Alloy 20 3/8" M-Series Valve Body Hast C 3/8" M-Series Valve Body CPVC	BPM-00561 BPM-00562 BPM-00563 BPM-00564 BPV-00565 BPV-00566 BPV-00567 BPM-00568	PRM-00561 PRM-00562 PRM-00563 PRM-00564 PRV-00565 PRV-00566 PRV-00567 PRM-00568
	1/2" G-Series Valve Body PVC 1/2" M-Series Valve Body PVC 1/2" G-Series Valve Body PP 1/2" M-Series Valve Body PP 1/2" G-Series Valve Body PTFE 1/2" M-Series Valve Body PTFE 1/2" G-Series Valve Body PVDF 1/2" M-Series Valve Body PVDF 1/2" G-Series Valve Body 316 SS 1/2" M-Series Valve Body 316 SS 1/2" G-Series Valve Body Alloy 20 1/2" M-Series Valve Body Alloy 20 1/2" G-Series Valve Body Hast C 1/2" M-Series Valve Body Hast C 1/2" G-Series Valve Body CPVC 1/2" M-Series Valve Body CPVC	BPV-00511 BPM-00511 BPV-00512 BPM-00512 BPV-00513 BPM-00513 BPV-00514 BPM-00514 BPV-00515 BPV-005151 BPV-00516 BPV-005161 BPV-00517 BPV-005171 BPV-00518 BPV-00518	PRV-00511 PRM-00511 PRV-00512 PRM-00512 PRV-00513 PRM-00513 PRV-00514 PRM-00514 PRV-00515 PRV-005151 PRV-00516 PRV-005161 PRV-00517 PRV-005171 PRV-00518 PRM-00518
	3/4" G-Series Valve Body PVC 3/4" G-Series Valve Body PP 3/4" G-Series Valve Body PTFE 3/4" G-Series Valve Body PVDF 3/4" G-Series Valve Body 316 SS 3/4" G-Series Valve Body Alloy 20 3/4" G-Series Valve Body Hast C 3/4" G-Series Valve Body CPVC	BPV-00521 BPV-00522 BPV-00523 BPV-00524 BPV-00525 BPV-00526 BPV-00527 BPV-00528	PRV-00521 PRV-00522 PRV-00523 PRV-00524 PRV-00525 PRV-00526 PRV-00527 PRV-00528
	1" G-Series Valve Body PVC 1" G-Series Valve Body PP 1" G-Series Valve Body PTFE 1" G-Series Valve Body PVDF 1" G-Series Valve Body 316 SS 1" G-Series Valve Body Alloy 20 1" G-Series Valve Body Hast C 1" G-Series Valve Body CPVC	BPV-00531 BPV-00532 BPV-00533 BPV-00534 BPV-00535 BPV-00536 BPV-00537 BPV-00538	PRV-00531 PRV-00532 PRV-00533 PRV-00534 PRV-00535 PRV-00536 PRV-00537 PRV-00538
	1 1/2" Valve Body PVC (5" OD) 1 1/2" Valve Body PP (5" OD) 1 1/2" Valve Body PTFE (5" OD) 1 1/2" Valve Body PVDF (5" OD) 1 1/2" Valve Body 316 SS (5" OD) 1 1/2" Valve Body Alloy 20 (5" OD) 1 1/2" Valve Body Hast C (5" OD) 1 1/2" Valve Body CPVC (5" OD)	BPV-50541 BPV-50542 BPV-50543 BPV-50544 BPV-50545 BPV-50546 BPV-50547 BPV-50548	PRV-50541 PRV-50542 PRV-50543 PRV-50544 PRV-50545 PRV-50546 PRV-50547 PRV-50548
	2" Valve Body PVC 2" Valve Body PP 2" Valve Body PTFE 2" Valve Body PVDF 2" Valve Body 316 SS 2" Valve Body Alloy 20 2" Valve Body Hast C 2" Valve Body CPVC	BPV-00551 BPV-00552 BPV-00553 BPV-00554 BPV-00555 BPV-00556 BPV-00557 BPV-00558	PRV-00551 PRV-00552 PRV-00553 PRV-00554 PRV-00555 PRV-00556 PRV-00557 PRV-00558