WALCHEM

Iwaki America Inc.

Back Pressure/Pressure Relief Valves

Instruction Manual

Back Pressure Valves
Pressure Relief Valves

180280.E Revision Date: 12/2012

Five Boynton Road Hopping Brook Park Holliston, MA 01746 USA

TEL: 508-429-1110 FAX: 508-429-7433 WEB: www.walchem.com

INTRODUCTION

WALCHEM 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 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.

WALCHEM 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 adjustment screw in the top of the valve.

INSTALLATION

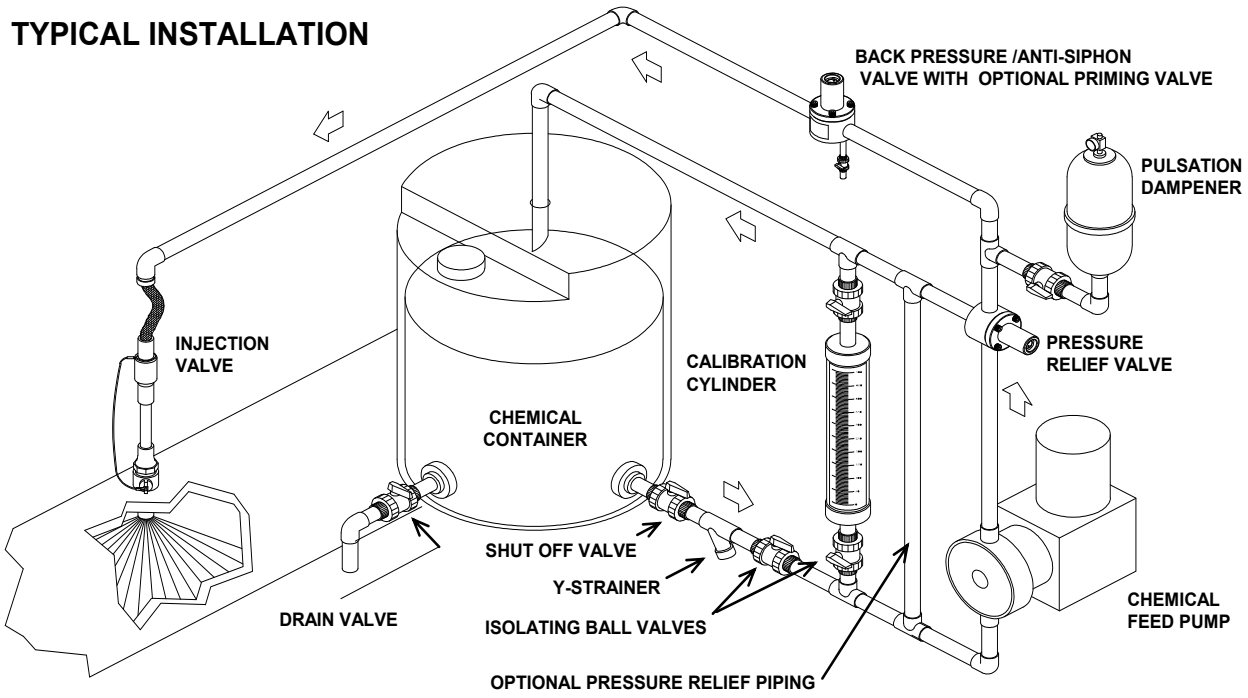
Back Pressure Valve:
Generally, the back pressure valve can be installed anywhere in the discharge line, provided there is some downstream pressure at the dosage point. If there is no downstream pressure the back pressure valve should be installed at the dosage point to prevent siphoning and drainage of the chemical line. All **WALCHEM** 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. Consult with your pump manufacturer to get his recommendations.

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 **WALCHEM** valves are factory set at 50psi, 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 head to the relief port. To compensate, divide the NPSH by 4 and add this pressure to the relief valve setting. Do not install shut-off valve in the relief line.

TYPICAL INSTALLATION



MAINTENANCE:

The pressure relief and back pressure valves are 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.

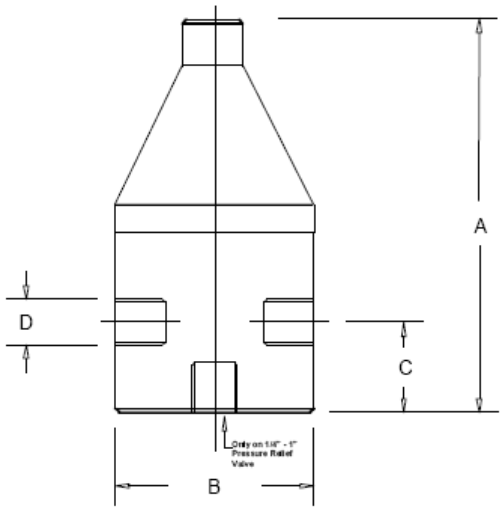
Caution: Ensure the system is not under pressure and that the chemical lines are flushed with water before disassembly.

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

After the diaphragm has been inspected and replaced if necessary; check the adjustment spring. Make sure there is no rust or corrosion. Replace the spring if needed. Place the spring and support disc onto the valve, and fit the valve top in position over the four bolts.

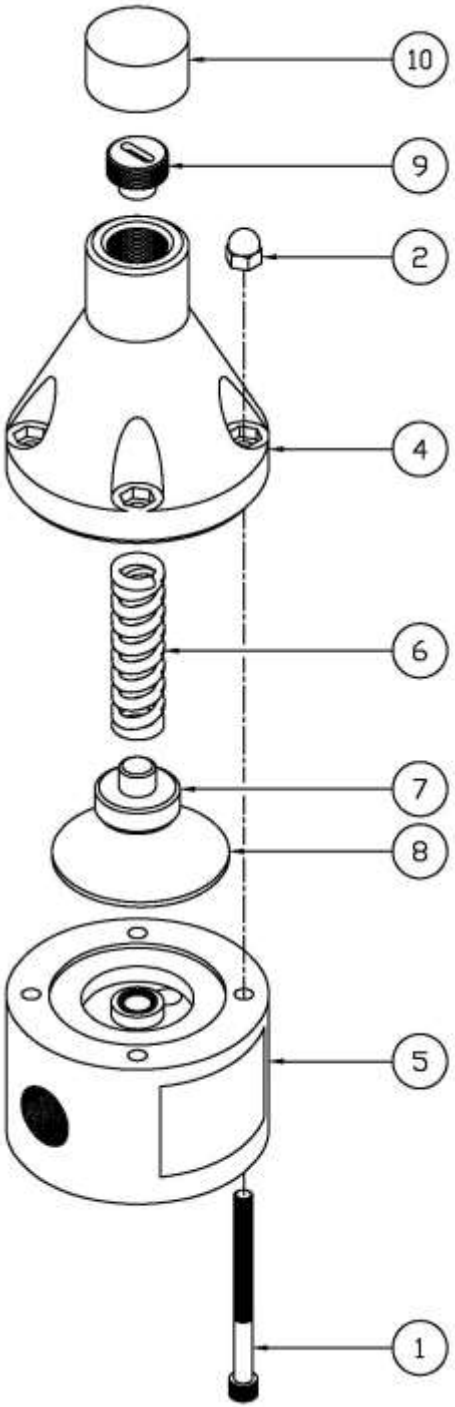
Snug down the four cap nuts then replace the adjustment screw. Turn the adjustment screw clockwise to approximately the same position as it was prior to disassembly. If an exact pressure setting is required or a different pressure is desired a pressure gauge should be used to verify the setting. Turning the adjustment screw clockwise will increase pressure.

DIMENSIONS:



D	A (in)	B (in)	C (in)
1/4”	3.55	2.35	0.750
3/8”	3.55	2.35	0.750
1/2”	4.25	2.35	0.750
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	2.150

PARTS LIST



ITEM	DESCRIPTION	PART #
1	10/32 X 2 1/2" Bolt - M-Series 1/2" Plastic Valves	PV-00113
	10/32 X 1 3/4 Bolt - M-Series 1/4" – 3/8" Plastic Valves	PV-00106
	10/32 X 3/4" Bolt – M-Series Metal Valves	PV-00107
	1/4 - 20 X 2 3/4" Bolt - 1/2 - 1" Plastic Valves	PV-00101
	5/16 - 18 X 1 1/2" Bolt - 1 1/2" - 2" Metal Valves	PV-00102
	1/4 - 20 X 4.5" Bolt - 1 1/2"(5"OD Body)	PV-00104
	1/4 - 20 X 5" Bolt - 1 1/2"(OBS 4.5"OD) & 2" Plastic Valves	PV-00105
	1/4 - 20 X 1 1/4" Bolt - 1/2 - 1" Metal Valves	PV-00108
2	1/4 - 20 Cap hex nut	PV-00202
	10/32 Cap hex nut	PV-00201
3	1/4 Flat Washer (Required with 316SS Top)	PV-00302
	5/16 Flat washer (Required with 316SS Top)	PV-00303
	10/32 Flat Washer- (Required with 316SS Top)	PV-00301
4	1/4" -1/2" Valve Top - Noryl, Black, M-Series	PV-004040
	1/4" -1/2" Valve Top -316 SS, M-Series	PV-00403
	1/2" - 1" Valve Top -Noryl. Black, G-Series	PV-004451
	1/2" - 1" Valve Top - 316 SS, G-Series	PV-00407
	1 1/2" - 2" Valve Top - 5" Valves, Noryl, Metal Bodies	PV-004171
	1 1/2" - 2" Valve Top - 5" Valves, Noryl, Plastic Bodies	PV-004175
	1 1/2" - 2" Valve Top - 5" Valves, 316 SS	PV-00416
6	Pressure Spring - 1/4" - 1/2" Valve; 150 psi	PV-00601
	Pressure Spring - 1/4" - 1/2" Valve; 50 psi	PV-006011
	Pressure Spring - 1/4" - 1/2" Valve; 250 psi	PV-006013
	Pressure Spring - 1/4" - 1/2" Valve; 350 psi	PV-006012
	Pressure Spring - 1/4" - 1/2" Valve; 100 psi, 316 SS	PV-0601S
	Pressure Spring - 1/2" - 1" Valve; 150 psi	PV-00602
	Pressure Spring - 1/2" - 1" Valve; 50 psi	PV-006021
	Pressure Spring - 1/2" - 1" Valve; 250 psi	PV-006023
	Pressure Spring - 1/2" - 1" Valve; 350 psi	PV-006122
	Pressure Spring - 1/2" - 1" Valve; 100 psi, 316 SS	PV-00602S
	Pressure Spring - 1 1/2" - 2" Valve; 150 psi	PV-00603
	Pressure Spring - 1 1/2" - 2" Valve; 350 psi	PV006031
	Pressure Spring - 1 1/2" - 2" Valve; 50 psi	PV006033
7	Support Disc - 1/4" - 1/2" Valve, PVC	PV-00701
	Support Disc - 1/4" - 1/2" Valve, 316 SS	PV-00702
	Support Disc - 1/2 - 1" Valve, PVC	PV-00705
	Support Disc - 1/2 - 1" Valve, 316 SS	PV-00706
	Support Disc – 1 1/2" - 2" Valve, PVC	PV-00707
	Support Disc – 1 1/2" - 2" Valve, 316 SS	PV-00709
8	Diaphragm - 1/4" - 1/2" Valve - PTFE / EPDM	PV-00800
	Diaphragm - 1/4" - 1/2" Valve – Viton	PV-00802
	Diaphragm - 1/4" - 1/2" Valve - PTFE / Viton (High Temperature)	PV-00803
	Diaphragm - 1/2" - 1" Valve - PTFE / EPDM	PV-00810
	Diaphragm - 1/2" - 1" Valve – Viton	PV-00812
	Diaphragm - 1/2" - 1" Valve - PTFE / Viton (High Temperature)	PV-00813
	Diaphragm - 1 1/2" Valve - PTFE / EPDM (OBS 4.5" Body)	PV-00820
	Diaphragm - 1 1/2" Valve – Viton (OBS 4.5" Body)	PV-00821
	Diaphragm - 1 1/2" Valve – PTFE/Viton(OBS 4.5" Body)	PV-00822
	Diaphragm - 1 1/2" - 2" Valve – PTFE/EPDM (5" Body)	PV-00830
	Diaphragm - 1 1/2" - 2" Valve – Viton (5" Body)	PV-00831
	Diaphragm - 1 1/2" - 2" Valve – PTFE/Viton (5" Body)	PV-00832
9	Adjustment Screw - 1/4" - 1" Valve Coated Steel	PV-00903
	Adjustment Screw - 1/4" - 1" Valve PET	PV-00906
	Adjustment Screw - 1 1/2" - 2" Valve PET	PV-00926
	Adjustment Screw - 1 1/2" - 2" Valve Coated Steel	PV-00921

ITEM	DESCRIPTION	BPV #	PRV #
5	1/4" Valve Body PVC	BPM-00501	PRM-00501
	1/4" Valve Body PP	BPM-00502	PRM-00502
	1/4" Valve Body PTFE	BPM-00503	PRV-00503
	1/4" Valve Body PVDF	BPM-00504	PRM-00504
	1/4" Valve Body 316 SS	BPV-00505	PRV-00505
	1/4" Valve Body Alloy 20	BPV-00506	PRV-00506
	1/4" Valve Body Hast C	BPV-00507	PRV-00507
	1/4" Valve Body CPVC	BPM-00508	PRM-00508
	3/8" Valve Body PVC	BPM-00561	PRM-00561
	3/8" Valve Body PP	BPM-00562	PRM-00562
	3/8" Valve Body PTFE	BPM-00563	PRM-00563
	3/8" Valve Body PVDF	BPM-00564	PRM-00564
	3/8" Valve Body 316 SS	BPV-00565	PRV-00565
	3/8" Valve Body Alloy 20	BPV-00566	PRV-00566
	3/8" Valve Body Hast C	BPV-00567	PRV-00567
	3/8" Valve Body CPVC	BPM-00568	PRM-00568
	1/2" Valve Body PVC	BPM-00511	PRM-00511
	1/2" Valve Body PP	BPM-00512	PRM-00512
	1/2" Valve Body PTFE	BPM-00513	PRM-00513
	1/2" Valve Body PVDF	BPM-00514	PRM-00514
	1/2" Valve Body 316 SS	BPV-005151	PRV-005151
	1/2" Valve Body Alloy 20	BPV-005161	PRV-005161
	1/2" Valve Body Hast C	BPV-005171	BPV-005171
	1/2" Valve Body CPVC	BPM-00518	PRM-00518
	3/4" Valve Body PVC	BPV-00521	PRV-00521
	3/4" Valve Body PP	BPV-00522	PRV-00522
	3/4" Valve Body PTFE	BPV-00523	PRV-00523
	3/4" Valve Body PVDF	BPV-00524	PRV-00524
	3/4" Valve Body 316 SS	BPV-00525	PRV-00525
	3/4" Valve Body Alloy 20	BPV-00526	PRV-00526
	3/4" Valve Body Hast C	BPV-00527	BPV-00527
	3/4" Valve Body CPVC	BPV-00528	PRV-00528
	1" Valve Body PVC	BPV-00531	PRV-00531
	1" Valve Body PP	BPV-00532	PRV-00532
	1" Valve Body PTFE	BPV-00533	PRV-00533
	1" Valve Body PVDF	BPV-00534	PRV-00534
	1" Valve Body 316 SS	BPV-00535	PRV-00535
	1" Valve Body Alloy 20	BPV-00536	PRV-00536
	1" Valve Body Hast C	BPV-00537	BPV-00537
	1" Valve Body CPVC	BPV-00538	PRV-00538
	1 1/2" Valve Body PVC	BPV-50541	BPV-50541
	1 1/2" Valve Body PP	BPV-50542	BPV-50542
	1 1/2" Valve Body PTFE	BPV-50543	BPV-50543
	1 1/2" Valve Body PVDF	BPV-50544	BPV-50544
	1 1/2" Valve Body 316 SS	BPV-50545	BPV-50545
	1 1/2" Valve Body Alloy 20	BPV-50546	BPV-50546
	1 1/2" Valve Body Hast C	BPV-50547	BPV-50547
	1 1/2" Valve Body CPVC	BPV-50548	BPV-50548
	2" Valve Body PVC	BPV-00551	BPV-00551
	2" Valve Body PP	BPV-00552	BPV-00552
	2" Valve Body PTFE	BPV-00553	BPV-00553
	2" Valve Body PVDF	BPV-00554	BPV-00554
	2" Valve Body 316 SS	BPV-00555	BPV-00555
	2" Valve Body Alloy 20	BPV-00556	BPV-00556
	2" Valve Body Hast C	BPV-00557	BPV-00557
	2" Valve Body CPVC	BPV-00558	BPV-00558
	Protective Vinyl Cap - 1/2" -1" G-Series Valves		PV-01001
	Protective Vinyl Cap - 1/4" - 1/2" M-Series Valves		PV-010011
	Protective Vinyl Cap - 1 1/2" - 2" Valves		PV-01002