



# M-Series Instruction Manual

**Back Pressure Valves  
Pressure Relief Valves**

Made in the USA

INSM-1003-R1012

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Call: 1 - 800 - GRIFFCO

Website: [www.griffcovalve.com](http://www.griffcovalve.com)

**PLEASE READ THE FOLLOWING INFORMATION PRIOR TO INSTALLING GRIFFCO VALVE PRODUCTS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN INJURY**

1. *Griffco Valve guarantees its products against defective material and workmanship only. Griffco Valve assumes no responsibility for damage or injuries resulting from improper installation, misapplication, or abuse of any product.*
2. *Griffco Valve assumes no responsibility for damage or injury resulting from chemical incompatibility between its products and the process fluids to which they are subjected. Compatibility charts provided in Griffco Valve literature are based on ambient temperatures of 70°F and are for reference only. Customers should always test to determine application suitability.*
3. *Consult Griffco Valve literature to determine operating pressure, temperature, and flow rate limitations before installing any Griffco Valve products. The maximum recommended fluid velocity through this product is eight feet per second. Higher flow rates can result in possible damage due to the water hammer effect. Also note that maximum operating pressure is dependent upon material selection as well as operating temperature.*
4. *This product is designed primarily for use with non-compressible liquids. It should NEVER be used or tested with compressible fluids such as compressed air or nitrogen.*
5. *Systems should always be depressurized and drained prior to installing or maintaining Griffco Valve products.*
6. *Temperature effect on piping systems should always be considered when the systems are initially designed. Piping systems must be designed and supported to prevent excess mechanical loading on Griffco Valve equipment due to system misalignment, weight, shock, vibration, and the effects of thermal expansion and contraction.*
7. *Because PVC and CPVC plastic products become brittle below 40°F, Griffco Valve recommends caution in their installation and use below this temperature.*
8. *Published operating torque requirements are based upon testing of new valves using clean water at 70°F. Valve torque is affected by many factors including fluid chemistry, viscosity, flow rate, and temperature. These should be considered when sizing electric or pneumatic actuators.*
9. *Due to differential thermal expansion rates between metal and plastic, transmittal of pipe vibration, and pipe loading forces **DIRECT INSTALLATION OF METAL PIPE INTO PLASTIC CONNECTIONS IS NOT RECOMMENDED.** Wherever installation of plastic valves or strainers into metal piping systems is necessary, it is recommended that at least 10 pipe diameter in length of plastic pipe be installed upstream and downstream of the plastic valve to compensate for the factors mentioned above.*

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# ***LIMITED WARRANTY***

Griffco Valve Inc. (“GVI”) warrants that its products shall be free from defects in material and workmanship for a period of one year under normal use or eighteen (18) months from date of shipment, which first occurs. Defects caused by shipment, improper installation, negligence or misuse by parties other than GVI are not covered by this limited warranty. This limited warranty is extended only to the original purchaser from GVI.

The purchaser must promptly notify GVI of any claimed defect. Products may only be returned to GVI upon purchaser’s receipt of written consent from GVI. Products are to be returned to GVI with freight prepaid. If GVI’s inspection shows the products to be defective, GVI’s liability in respect of defective products shall be to repair or replace such item(s) in its discretion.

EXCEPT FOR THE EXPRESS LIMITED WARRANTY SET FORTH HERE, NO OTHER IMPLIED WARRANTIES OF ANY KIND, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE HEREBY DISCLAIMED. GVI SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES.

**GVI’S MAXIMUM LIABILITY SHALL NOT IN ANY EVENT EXCEED THE CONTRACT PRICE FOR THE PRODUCT.**

# ***SAFETY PRECAUTIONS***

## **Always follow the safety instruction below:**

- Wear protective clothing and glasses when working with or near chemicals.
- Refer to the MSDS for all chemicals used.
- Use on Genuine Griffco parts. Use of other parts may result in damage to equipment or injury and invalidate warranty.
- Flush all components that are in contact with chemicals prior to servicing.
- Secure all chemicals and equipment making them inaccessible to children and pets.
- Dispose all chemicals and waste according to all local, state and federal regulations.
- Stop the flow of chemicals through the system prior to working on the valve.
- **Do Not** exceed the maximum operating pressure.



# ***INSTALLATION***

## **Unpacking:**

Units are shipped FOB factory and the title passes to the customer when the carrier signs for the receipt of the unit. In the event damages occur during shipment, it is the responsibility of the customer to notify the carrier immediately and to file a damage claim.

Check all orders for completeness against the packing list. Notify Griffco Valve Inc. immediately if any deficiencies are found.

The carton should contain:

- 1 Backpressure valve or Pressure Relief valve
- 1 Instruction Manual
- Accessories as ordered

## **Installation:**

**As a general rule, installation should follow the layout as outlined in the “TYPICAL INSTALLATION” drawing.**

## **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. The valve can be installed either vertically or horizontally. The flow must be across the valve in the direction of the arrow. All **GRIFFCO** 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. Pulsation dampeners will also reduce the pressure drop across the valve by reducing peak flows. Backpressure valves should be installed downstream of the dampener. For most 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:**

#### **3 Port Valves:**

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. The valve can be installed either vertically or horizontally. The relief port is on the bottom of the valve.

#### **2 Port 180° Valves:**

Installation of a tee 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. The flow can travel at 90° or 180° through the tee, with the relief valve connected to the 3<sup>rd</sup> port of the tee. Direction of relief flow must be in the direction of the arrow on the valve.

## 2 Port 90° Valves:

Installation of a tee 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. The flow can travel at 90° or 180° through the tee, with the relief valve connected to the 3<sup>rd</sup> port of the tee. Direction of relief flow must be in the side of the valve with the relief port being on the bottom.

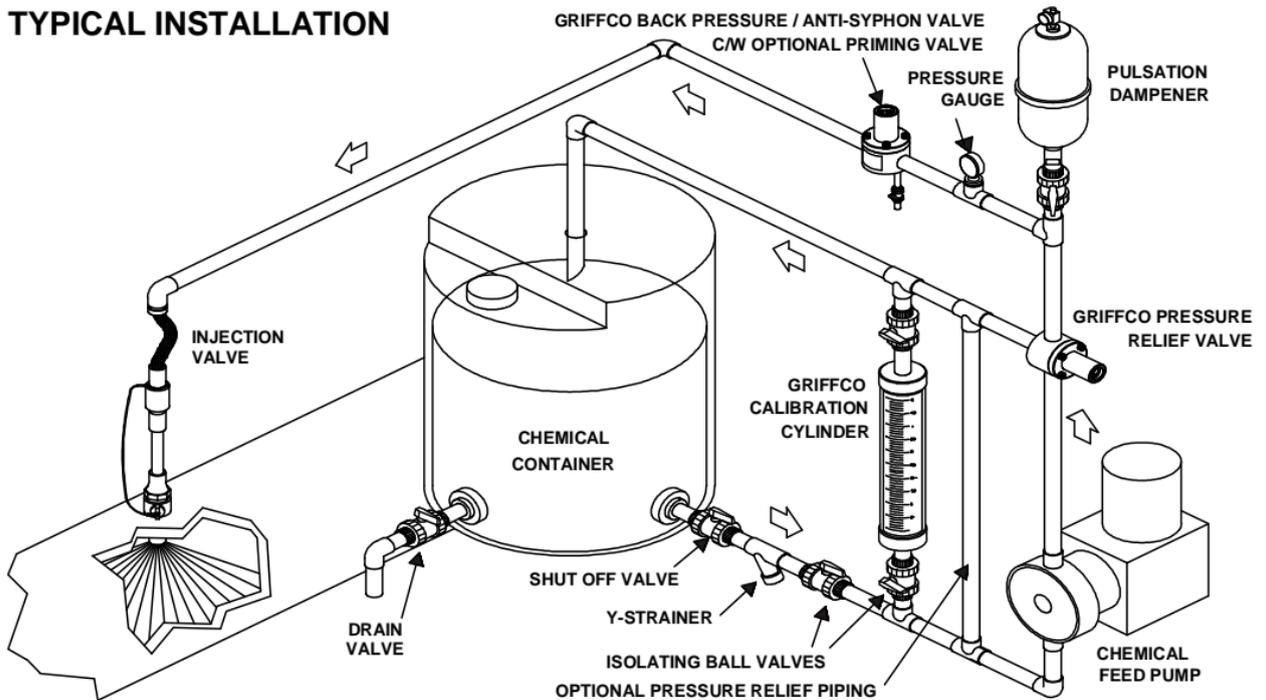
The optimum installation for any relief valve is to vent the relief port back to the chemical tank, or directly to a containment area. However if this is not possible, the relief port can be piped back into the suction side of the pump. This will apply the suction head to the relief port. To compensate, divide the NPSH by 4 and add this pressure to the relief valve setting. Do not put a shut off valve in the relief line.

All **GRIFFCO** valves are factory set at 50 psi, however field adjustment is possible with the adjustment screw.

## Important Precautions:

- Do not over tighten the connection piping.
- It is not recommended threading metal pipe or pipe fittings into plastic valves.
- Care should be taken when applying thread sealant to pipe threads not to use excessive amounts as the sealant could break free and get lodged between the valve seat and the diaphragm causing the valve to weep.
- Check to ensure that the valve bolts are tight.
- Do not bottom out the adjustment screw.

# TYPICAL INSTALLATION



# ***OPERATION***

## **Start-up:**

Before starting the chemical feed system make sure the backpressure and safety valves are installed correctly and the proper pressures are set for the application. The valves are factory set at 50 psi unless otherwise specified. Valves can be field adjusted.

## **Adjusting Set Pressure:**

The set pressure of the valves can be adjusted to any pressure value between the maximum and minimum value as stated on the valve ID tag. This is done via the adjustment screw located under the black cap on the top of the valve. To increase the pressure, turn the screw clockwise. This should be done with the pump operating and a pressure gauge installed between the pump and the back pressure valve. If no gauge is installed the pressure can be estimated to change approximately 25 psi per revolution.

## **Caution:**

Pressure setting changes should be made only after careful consideration of the effect of the change on the entire hydraulic system, including the chemical feed pump. Never attempt to adjust the valve outside the pressure limit as improper operation and/or damage to the valve and/or system components may occur.

# ***MAINTENANCE***

## **General:**

Griffco valves were designed with a minimum amount of maintenance required to keep the valves in operation. However, periodic replacement of the diaphragm is required. The Griffco design permits routine inspection and repair without removing the valve from the pump line.

## **Caution:**

**Ensure that the chemical feed system is not under pressure and that the chemical lines have been flushed with water before starting disassembly.**

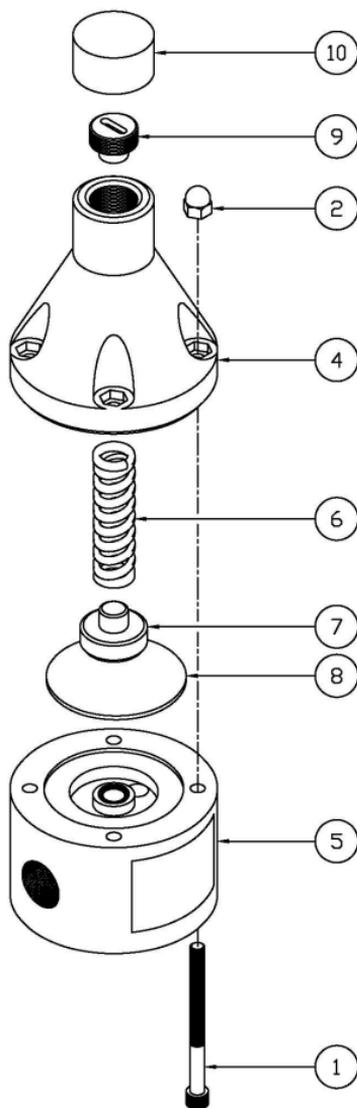
Unscrew the pressure adjustment screw to remove the pressure from the diaphragm. Remove the 4 bolts and lift off the valve top.

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 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.

**Use only genuine Griffco Valve parts in your Griffco Valves.**

# SPARE PARTS



## COMMON VALVE PARTS:

<b>1</b>	10/32 X 2 1/2" Bolt - M-Series 1/2" Plastic Valves 10/32 X 1 3/4 Bolt - M-Series 1/4" – 3/8" Plastic Valves 10/32 X 3/4" Bolt – M-Series Metal Valves	PV-00113 PV-00106 PV-00107
<b>2</b>	10/32 Cap Nut - SS	PV-00201
<b>3</b>	10/32 Flat Washer (For Metal Valves with Metal tops)	PV-00301
<b>4</b>	1/4" - 1/2" Valve Top – Noryl. Black 1/2" – External Adjustment Valve Top – PVC 1/4" - 1/2" Valve Top - 316 SS	PV-004040 PV-004029 PV-00403
<b>6</b>	Pressure Spring - 1/4" - 1/2" Valve; 150 psi Pressure Spring - 1/4" - 1/2" Valve; 50 psi Pressure Spring - 1/4" - 1/2" Valve; 250 psi Pressure Spring - 1/4" - 1/2" Valve; 350 psi Pressure Spring - 1/4" - 1/2" Valve; 100 psi, 316 SS	PV-00601 PV-006011 PV-006013 PV-006012 PV-00601S
<b>7</b>	Support Disc - 1/4" - 1/2" Valve, PVC Support Disc - 1/4" - 1/2" Valve, 316 SS	PV-00701 PV-00702
<b>8</b>	Diaphragm - 1/4" - 1/2" Valve - PTFE / EPDM Diaphragm - 1/4" - 1/2" Valve – Viton Diaphragm - 1/4" - 1/2" Valve - PTFE / Viton	PV-00800 PV-00802 PV-00803
<b>9</b>	Adjustment Screw - 1/4" - 1/2" Valve PET (White) Adjustment Screw - 1/4" - 1/2" Valve Coated Steel	PV-00906 PV-00903
<b>10</b>	Protective Vinyl Cap – Small -For Valves w/ OSS & MSS Protective Vinyl Cap – X-small	PV-01001 PV-010011

# BACKPRESSURE VALVE PARTS:

ITEM	DESCRIPTION	PART #
5	1/4" Valve Body PVC	BPM-00501
	1/4" Valve Body PP	BPM-00502
	1/4" Valve Body PTFE	BPM-00503
	1/4" Valve Body PVDF	BPM-00504
	1/4" Valve Body 316 SS	BPV-00505
	1/4" Valve Body Alloy 20	BPV-00506
	1/4" Valve Body Hast C	BPV-00507
	1/4" Valve Body CPVC	BPM-00508
	3/8" Valve Body PVC	BPM-00561
	3/8" Valve Body PP	BPM-00562
	3/8" Valve Body PTFE	BPM-00563
	3/8" Valve Body PVDF	BPM-00564
	3/8" Valve Body 316 SS	BPV-00565
	3/8" Valve Body Alloy 20	BPV-00566
	3/8" Valve Body Hast C	BPV-00567
	3/8" Valve Body CPVC	BPM-00568
	1/2" Valve Body PVC	BPM-00511
	1/2" Valve Body PP	BPM-00512
	1/2" Valve Body PTFE	BPM-00513
	1/2" Valve Body PVDF	BPM-00514
	1/2" Valve Body 316 SS	BPV-00515
	1/2" Valve Body Alloy 20	BPV-00516
	1/2" Valve Body Hast C	BPV-00517
	1/2" Valve Body CPVC	BPM-00518

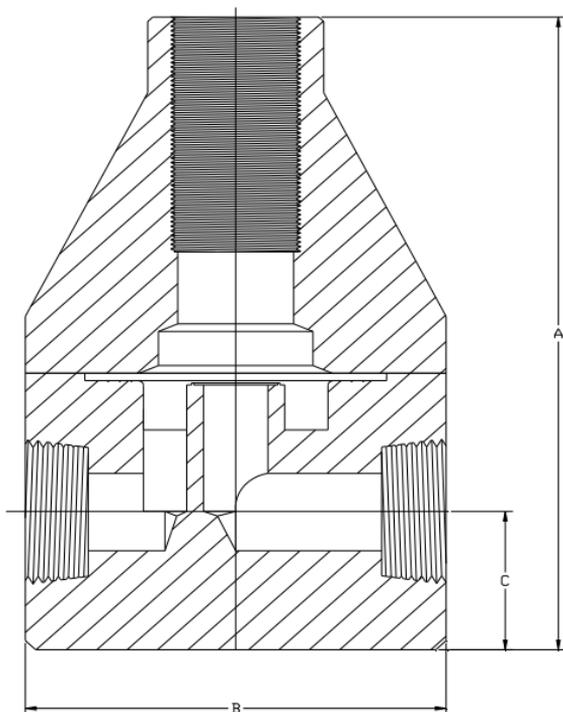
# PRESSURE RELIEF VALVE PARTS:

ITEM	DESCRIPTION	PART #
5	1/4" Valve Body PVC	PRM-00501
	1/4" Valve Body PP	PRM-00502
	1/4" Valve Body PTFE	PRM-00503
	1/4" Valve Body PVDF	PRM-00504
	1/4" Valve Body 316 SS	PRV-00505
	1/4" Valve Body Alloy 20	PRV-00506
	1/4" Valve Body Hast C	PRV-00507
	1/4" Valve Body CPVC	PRM-00508
	3/8" Valve Body PVC	PRM-00561
	3/8" Valve Body PP	PRM-00562
	3/8" Valve Body PTFE	PRM-00563
	3/8" Valve Body PVDF	PRM-00564
	3/8" Valve Body 316 SS	PRV-00565
	3/8" Valve Body Alloy 20	PRV-00566
	3/8" Valve Body Hast C	PRV-00567
	3/8" Valve Body CPVC	PRM-00568
	1/2" Valve Body PVC	PRM-00511
	1/2" Valve Body PP	PRM-00512
	1/2" Valve Body PTFE	PRM-00513
	1/2" Valve Body PVDF	PRM-00514
	1/2" Valve Body 316 SS	PRV-00515
	1/2" Valve Body Alloy 20	PRV-00516
	1/2" Valve Body Hast C	PRV-00517
	1/2" Valve Body CPVC	PRM-00518

# SPECIFICATIONS

<b>M-Series Sizes:</b>	<b>1/4" 3/8" 1/2"</b>	
<b>Flow Rates @ 150 psi</b>		
<b>Size:</b>	<b>Pulsating</b>	<b>Continuous</b>
<p style="text-align: center;">1/4" 3/8" 1/2"</p>	<p style="text-align: center;">100 USgph 200 USgph 300 USgph</p>	<p style="text-align: center;">5 USgpm 10 USgpm 15 USgpm</p>
<b>Max Temp: (°F)</b>	<b>PVC: 140° ; CPVC &amp; PP: 195°; PTFE, PVDF &amp; Metal: 300°, (Peak 390°)</b>	
<b>Max Operating Pressure(psi) @ 70°F</b>	<b>Plastic/Noryl: 375 psi Metal/Metal: 2000 psi</b>	
<b>Pressure Adjustment</b>	<b>Standard: 10 - 150 psi; Optional: 0 – 50 psi, 10 – 250 psi, 50 - 350 psi</b>	
<b>Materials of Construction:</b>		
<b>Diaphragm</b>	<b>PTFE / EPDM, Optional: Viton, Hypalon, &amp; PTFE / Viton</b>	
<b>Valve Body</b>	<b>PVC, CPVC, PP, PTFE, PVDF, Halar, 316 SS, A 20, Hast. C</b>	

# DIMENSIONS:



DIMENSIONS: BPG-SERIES			
All Materials			
Size	A(in)	B(in)	C(in)
1/4"	3.550	2.350	0.750
3/8"	3.550	2.350	0.750
1/2"	4.25	2.350	1.080

# **NOTES**



**Griffco Valve Inc.  
6010 N. Bailey Ave.  
Ste 1B  
Amherst, NY 14226  
USA**

**Phone: 1 716-835-0891  
1 800-GRIFFCO  
Fax: 1 716-835-0893**

**E-Mail: [sales@griffcovalve.com](mailto:sales@griffcovalve.com)**

**Website: [www.griffcovalve.com](http://www.griffcovalve.com)**