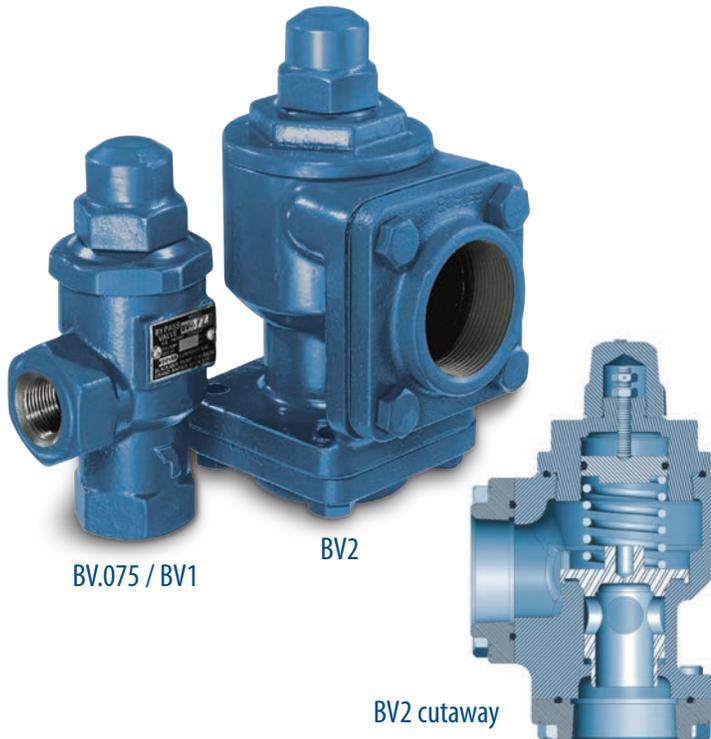




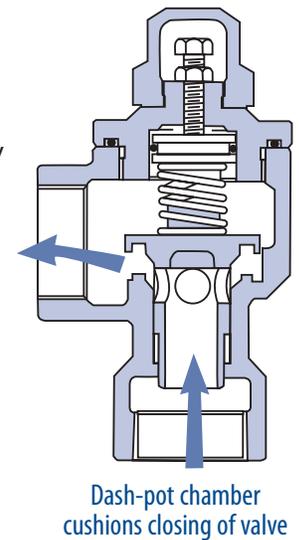
# Bypass Valves

## Precise, On-Line Pressure Protection



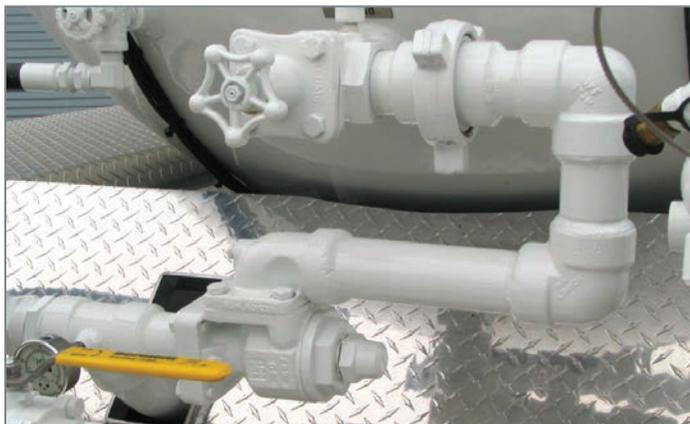
Blackmer bypass valves have no small, easily plugged, sensing passages; and with only two moving parts, their operation is simple and reliable. They open precisely at the preset spring pressure, and they close smoothly and quietly, thanks to a dash-pot design. As shown in Figure 1, a small chamber in the valve stem fills with liquid when the valve opens. This liquid then provides a hydraulic cushion preventing the valve from slamming shut if pressure is suddenly released. It also minimizes chatter and valve seat wear when pressures hover around the crucial limit.

**FIGURE 1.**  
Bypass valve operation



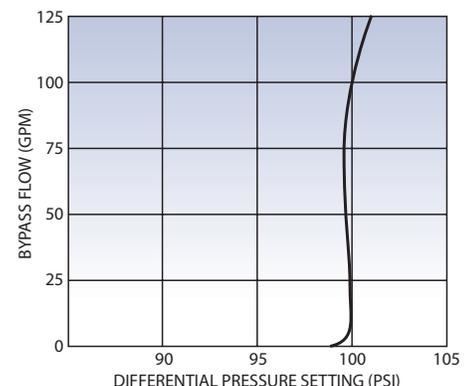
## Design Features

Blackmer differential bypass valves are designed to protect pumps and system components from excessive pressure damage, and no LP gas pump installation is complete without one. Blackmer offers five different models that provide full-flow pressure control to 250 U.S. gpm (946 L/min) at 120 psid (8.27 bar). Installation is easy with NPT tapped ports in sizes from 3/4" to 2". All models are suitable for both LP gas and anhydrous ammonia service.



## Performance

In operation, Blackmer valves provide exceptionally close pressure control, even under widely varying bypass flow conditions. The performance curve in Figure 2 shows how a Blackmer valve maintains a virtually constant pressure of 100 psi (6.89 bar) even as the volume being bypassed rises from 10 gpm to 100 gpm (38-378 L/min). Although the curve is that of a BV1.5" valve, the precision it demonstrates is typical of any Blackmer valve.



**FIGURE 2.**  
Bypass volume/pressure curve BV1.5



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### Selection Guide

**Model BV0.75** (ports are 3/4-inch NPT tapped)

**Model BV1** (ports are 1-inch NPT tapped)

These models are commonly used for cylinder-filling system. Either valve can be used with 1.25 or 1.5-inch Blackmer pump models.

**Model BV1.25** (ports are 1-1/4-inch NPT tapped)

**Model BV1.5** (ports are 1-1/2-inch NPT tapped)

These models are normally used for bobtail trucks and smaller bulk plant systems. Either valve can be used with 2- or 3-inch Blackmer pump models. Both valves are available with optional springs for use with the LGL158 or LGLH2.

**Model BV2** (Optional flanges: Ductile Iron 2-inch NPT companion, 1-1/4-inch and 1-1/2-inch NPT and cast steel 2-inch Weld. Or Stainless Steel 2-inch Weld, 2-inch Weld Elbow, 2-inch NPT Elbow)

The BV2 model is widely used for transports or larger bulk plant systems.

It is recommended for use with 3- and 4-inch Blackmer pump models. The BV2 is factory set at 125 psi (8.62 bar).

### Maximum flow through valve

Model	Maximum Rated Flow* - gpm (L/min) @			
	20 psi (1.38 bar)	50 psi (3.45 bar)	80 psi (5.52 bar)	120 psi (8.27 bar)
BV0.75 / BV1	25 (95)	40 (151)	50 (189)	60 (227)
BV1.25 / BV1.5	60 (227)	80 (303)	100 (379)	125 (473)
BV2	150 (568)	180 (681)	220 (833)	250 (946)

\*Normal maximum bypass flow rates without significantly exceeding the set pressure limit.

### Technical Assistance

In some applications, selecting the right pump or compressor may require more detailed information than can be presented in this bulletin. Your Blackmer representative can help you find the correct equipment to ensure the best performance possible for your specific application.

If you have a unique gas or fluid handling problem, please contact Blackmer at the telephone or fax number listed below.

View maintenance and training videos online at <http://www.youtube.com/BlackmerGlobal/>.



The BV0.75, BV1, BV1.25, and BV1.5 are all UL Listed for 200 psi differential.



Process | Energy | Military & Marine  
 PSG Grand Rapids  
 1809 Century Avenue SW, Grand Rapids, MI 49503-1530 USA  
 T 616.241.1611 • F 616.241.3752  
[blackmer.com](http://blackmer.com)



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