

Furon UPBM Back Pressure Regulators And How They Work



The Furon UPBM is a back pressure regulator for upstream pressure. It is a normally closed valve installed at the end of a piping system to provide an obstruction to a fluctuating flow that regulates and maintains the set inlet pressure. This type of component is generally positioned downstream from sensitive equipment in order to prevent any alteration or damage to an operation caused by flow fluctuations.

Manual vs Pneumatic

Pressure regulators can be controlled in two ways:

Pneumatically or Manually

The Manual Version: Contains a spring which can adjust the load manually and is the element that drives the opening or closing of the diaphragm. Using a spring with a wide range will reduce the accuracy of its effect.

Pro:

- Once your system is set it will not need to be adjusted
- No additional airline or air pressure regulator is needed

Con:

- Needs to be set each time that you want to change the pressure value
- The window of operation can be limited by the spring

The Pneumatic Version: The air pressure that feeds the regulator is the element that drives the opening or closing of the diaphragm. In most cases it provides a 1 to 1 ratio, which means the pressure that is used to feed the regulator should be equal to the pressure required as the controlled output value.

Pro:

- Can be adjusted quickly based on the intake value

Con:

- Need to settle an additional air line

How Does It Work?

The pressure is set at it's inlets side. From a simple operation point of view, as soon the inlet pressure exceeds the set value, the regulator opens to let go the excess.

The UPBM Pressure Regulator oscillates continuously between an open and closed position, to control fluctuating liquid pressure. See Figure 1.

Low Pressure in System

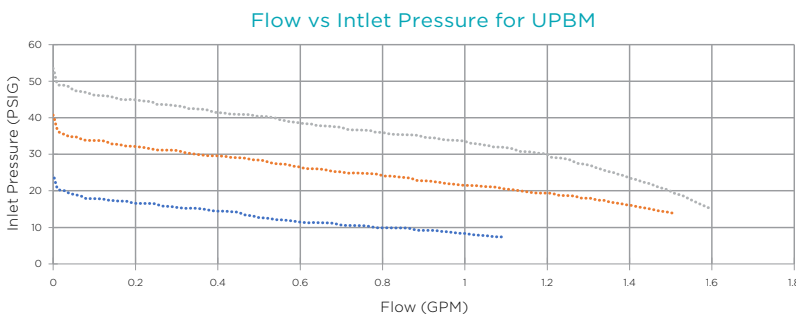
The set force resulting of pressure for actuation greater than the spring force + inlet upstream pressure force. The regulator stays closed as the upstream pressure builds up.

High Pressure in System

Set force resulting of pressure for actuation greater than the spring force + inlet upstream pressure force. The shaft moves up and allows liquid to flow through, adjusting the upstream.

As it functions to maintain upstream pressure, it is very appropriate to have a manifold with multiple feeding legs that may open at various times without altering the pressure set (like on a sprayer system).

The graph below displays the steadiness of outlet pressure regulation the UPBM provides at various pilot pressures.



- UPBM - Pilot Pressure 60 psig, Static Inlet Pressure 75 psig
- UPBM - Pilot Pressure 50 psig, Static Inlet Pressure 75 psig
- UPBM - Pilot Pressure 40 psig, Static Inlet Pressure 75 psig

Figure 1
UPBM Pressure Regulator - Pneumatic Version

