

# Pressure Management Valve

## Flow Compensated Pressure Reducing Valve

### Model 7PM

- Flow and leakage reduction
- Fully self operated
- Burst prevention
- Extends system service life
- Environmentally efficient
- Water and energy saving

The model 7PM Flow Compensated Pressure Reducing Valve is a hydraulically operated, diaphragm actuated control valve that automatically and continuously optimizes downstream pressure, correlating valve setting with demand.

### Features and Benefits

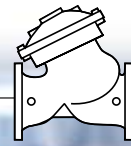
- **Self contained hydro-mechanical**
  - Does not rely on electrical power supply
  - Does not require additional pipeline accessories
- **Universal fitting**
  - Applicable to all sizes
  - Easily retro-fitted
  - Low maintenance and installation costs
- **Simple design**
  - Does not require specialist commissioning
  - Fits all "sites"
- **Double chamber design**
  - Moderated valve reaction
  - Protected diaphragm
- **V-Port throttling plug**
  - Very stable at low flow
  - Increased valve travel
- **Obstacle free, full bore** – Free flow pass
- **In-line serviceable** – Easy maintenance



Patent Pending

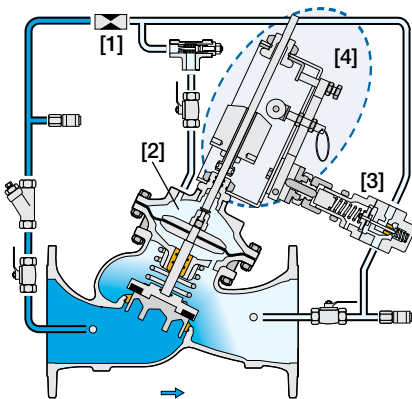
### Major Additional Features

- Downstream over pressure guard – **7PM-48**
- Check valve – **7PM-20**
- Hydraulic override – **7PM-09**
- Pressure sustaining – **723-PM**
- Flow control – **772-PM**

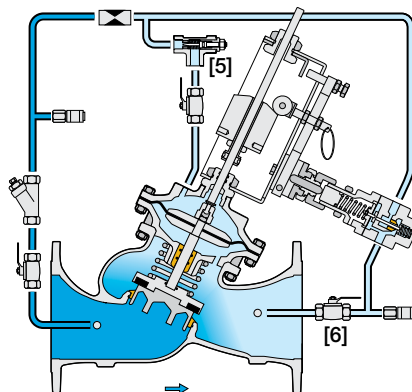


## Operation

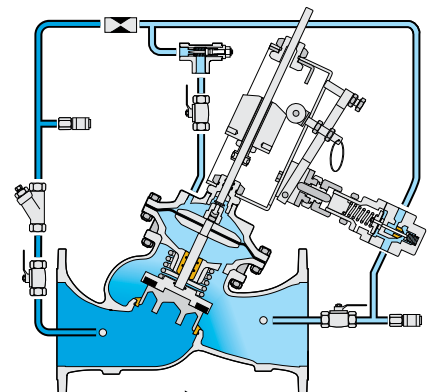
The model 7PM Flow Compensated Pressure Reducing Valve is a pilot controlled valve equipped with an adjustable, 2-way pressure reducing pilot linked to an automatically adapting flow compensating pressure adjusting system. The restriction [1] continuously allows flow from the valve inlet into the upper control chamber [2]. The pilot [3] senses downstream pressure. Should this pressure rise above pilot setting, the pilot throttles, enabling pressure in the upper control chamber to accumulate, causing the main valve to throttle closed, decreasing downstream pressure to pilot setting. Should downstream pressure fall below pilot setting, the pilot releases accumulated pressure, and the main valve modulates open. The pilot setting is automatically adjusted according to flow by the cam assembly [4] on the valve indicator stem. The integral orifice between the lower control chamber and valve outlet moderates valve reactions. The one-way flow control needle valve [5] stabilizes the valve's reaction in hard regulation conditions, by restricting the flow out of the control chamber. The downstream cock valve [6] enables manual closing.



Low Demand – Low Setting



Medium Demand – Medium Setting



High Demand – High Setting

## Pilot System Specifications

### Standard Materials:

#### Pilot:

Body: Stainless Steel 316 or Bronze  
 Elastomers: Synthetic Rubber  
 Spring: Galvanized Steel or Stainless Steel

#### Tubing & Fittings:

Stainless Steel 316 or Copper & Brass

#### Accessories:

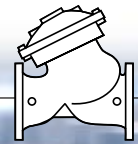
Stainless Steel 316, Brass and Synthetic Rubber Elastomers

#### Notes:

- Inlet pressure, outlet pressure and flow rate are required for optimal sizing and cavitation analysis
- Recommended continuous flow velocity:  
0.3-6.0 m/sec ; 1-20 ft/sec
- Minimum operating pressure: 0.7 bar ; 10 psi.  
For lower pressure requirements consult factory

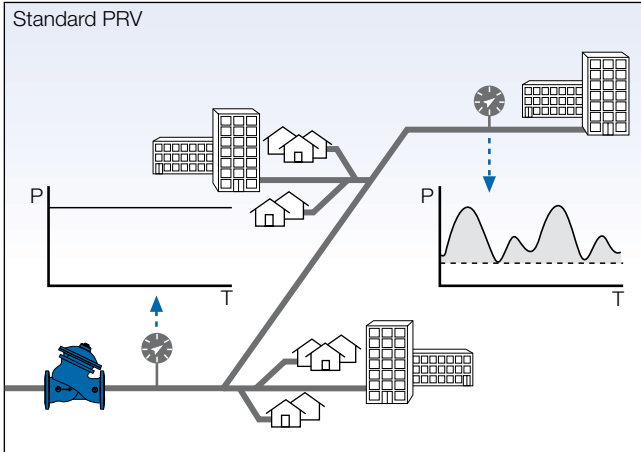
### 7PM Assembly Additional Height

Size Range		H	
700	700ES	mm	inch
1.5"-4"	1.5"-4"	315	12.4
6"	6"-8"	305	12.0
8"	10"	300	11.8
10"-14"	12"-16"	440	17.3
16"-20"	20"-24"	550	21.7

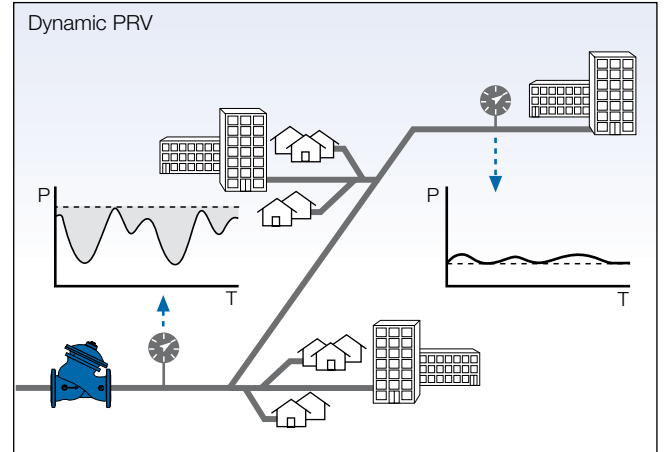


## Pressure Management

A well-planned pressure management program can significantly reduce not only volumes of real loss, but also maintenance costs by reducing occurrence of bursts and thereby extending the life of the system.



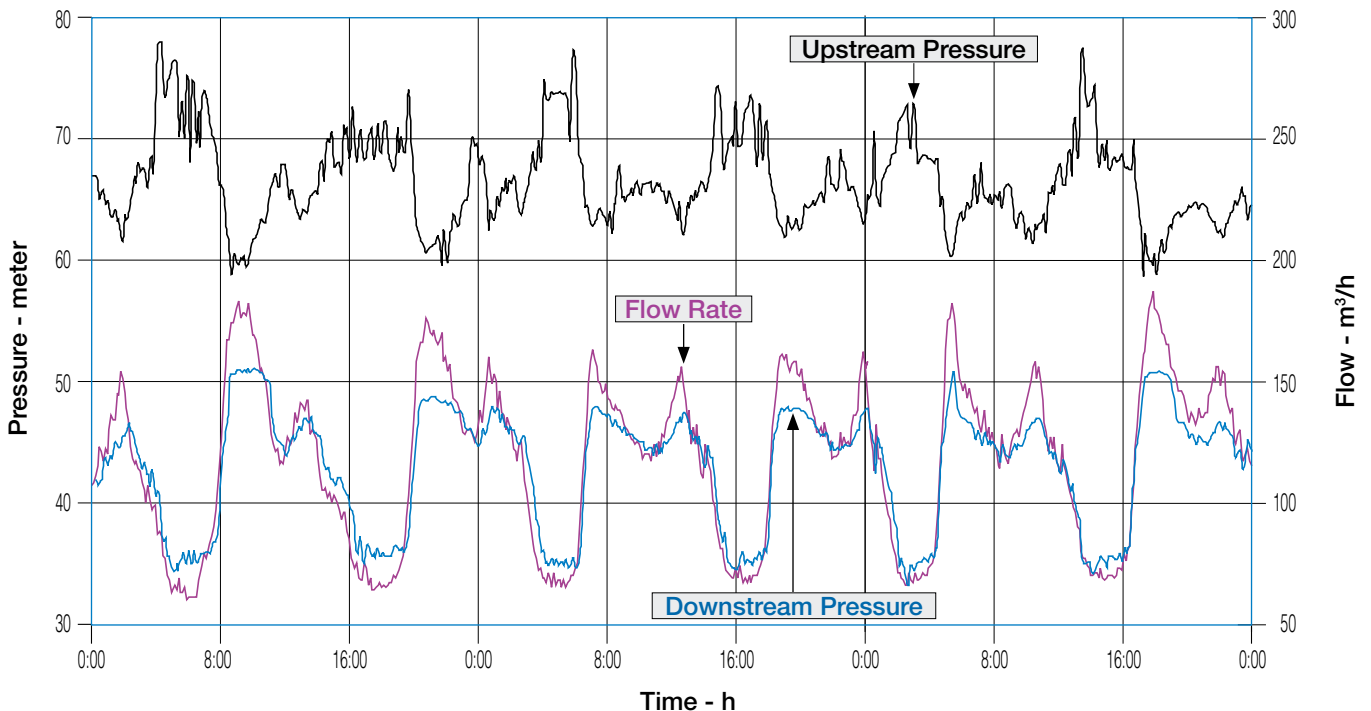
Fixed Outlet PRVs are set to maintain a constant low downstream pressure, ensuring sufficient pressure at the systems critical point during peak demand (when line friction head loss is highest). The shaded area represents the hours and levels when pressure is higher than required.

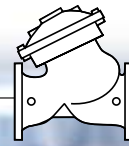


The Flow Compensated Pressure Reducing Valve, Bermad Model 7PM is designed to automatically and continuously optimise downstream pressure, correlating valve setting with demand. As a result, the average network pressure dramatically decreases, reducing system leakage, bursts, maintenance and energy costs. The shaded area represents the hours and levels of reduced leakage.

## Performance Graph

Automatic correlation of downstream pressure setting with demand.





## 700 Series

### Technical Data

**Size Range:** DN40-900 ; 1½-36"  
**End Connections (Pressure Ratings):**  
**Flanged:** ISO PN16, PN25 (ANSI Class 150, 300)  
**Threaded:** BSP or NPT  
**Others:** Available on request  
**Valve Patterns:** "Y" (globe) & angle, globe (DN600-900 ; 24"-36")  
**Working Temperature:** Water up to 80°C ; 180°F  
**Standard Materials:**  
**Body & Actuator:** Ductile Iron  
**Internals:** Stainless Steel, Bronze & coated Steel  
**Diaphragm:** Synthetic Rubber Nylon fabric-reinforced  
**Seals:** Synthetic Rubber  
**Coating:** Fusion Bonded Epoxy, RAL 5005 (Blue) approved for drinking water or Electrostatic Polyester Powder

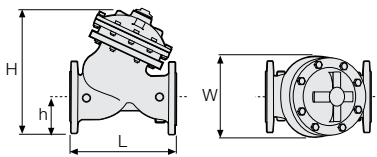
### Differential Pressure Calculation

$$\Delta P = \left( \frac{Q}{Kv; Cv} \right)^2$$

**ΔP** = Differential Pressure for fully open valve (bar; psi)  
**Q** = Flow rate (m³/h; gpm)  
**Kv** = Metric system - valve flow coefficient (flow in m³/h at 1 bar ΔP with 15°C water)  
**Cv** = US system - Valve flow coefficient (flow in gpm at 1 psi ΔP with 60°F water)  
**Cv** = 1.155 Kv

### Flow Data & Dimensions Table

DN / Size		40	1.5"	50	2"	65	2.5"	80	3"	100	4"	150	6"	200	8"	250	10"	300	12"	350	14"	400	16"	450	18"	500	20"		
Flow Data	700 & 700ES	Kv / Cv - Flat																											
	700 & 700EN	Kv / Cv - "Y" Flat																											
	700 & 700EN	Kv / Cv - "Y" V-Port																											
700-ES	PN16; 25	L (mm / inch)																											
	PN16; 25	W (mm / inch)																											
	PN16; 25	h (mm / inch)																											
	PN16; 25	H (mm / inch)																											
	PN16; 25	Weight (Kg/lb)																											
700-EN	PN16; 25	L (mm / inch)																											
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	PN16; 25	h (mm / inch)																											
	PN16; 25	H (mm / inch)																											
	PN16; 25	Weight (Kg/lb)																											
700 Flanged	"Y" PN16 Class 150	L (mm / inch)																											
	"Y" PN16 Class 150	W (mm / inch)																											
	"Y" PN16 Class 150	h (mm / inch)																											
	"Y" PN16 Class 150	H (mm / inch)																											
	"Y" PN16 Class 150	Weight (Kg/lb)																											
700 Flanged	"Y" PN25 Class 300	L (mm / inch)																											
	"Y" PN25 Class 300	W (mm / inch)																											
	"Y" PN25 Class 300	h (mm / inch)																											
	"Y" PN25 Class 300	H (mm / inch)																											
	"Y" PN25 Class 300	Weight (Kg/lb)																											
700 Threaded	"Y" PN16; 25 Class 150; 300	L (mm / inch)																											
	"Y" PN16; 25 Class 150; 300	W (mm / inch)																											
	"Y" PN16; 25 Class 150; 300	h (mm / inch)																											
	"Y" PN16; 25 Class 150; 300	H (mm / inch)																											
	"Y" PN16; 25 Class 150; 300	Weight (Kg/lb)																											



### Specify when ordering:

- Size
- Main model
- Additional features
- Pattern
- Body material
- End connection
- Coating
- Voltage & main valve position
- Tubing & Fittings materials
- Operational data (according to model)
- Pressure data
- Flow data
- Reservoir level data
- Settings

\* Use Bermad's Waterworks Ordering Guide

DN / Size		600	24"	700	28"	750	30"	800	32"	900	36"
Globe PN16 Class 150	L (mm / inch)	1,450	57.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	Weight (Kg/lb)	3,250	7,150	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,350
Globe PN25 Class 300	L (mm / inch)	1,500	59.1	1,650	65	1,750	68.9	1,850	72.8	1,850	72.8
	W (mm / inch)	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2	1,250	49.2
	h (mm / inch)	470	18.5	490	19.3	520	20.5	553	21.8	600	23.6
	H (mm / inch)	1,965	77.4	1,985	78.1	2,015	79.3	2,048	80.6	2,095	82.5
	Weight (Kg/lb)	3,500	7,700	3,700	8,140	3,900	8,580	4,100	9,020	4,250	9,370

