

# Pressure Reducing Valve Proportional Type

## Model MN-720-PD

Hydraulically operated, diaphragm actuated control valve that reduces higher upstream pressure to lower downstream pressure at a fixed ratio.

Bermad 700 Series valves are hydraulic, oblique pattern, globe valves with a seat assembly and double chamber unitized actuator, that can be disassembled from the body as a separate integral unit.

The valves hydrodynamic body is designed for unobstructed flow path and provides excellent and highly effective modulation capacity for high differential pressure applications.

The 700 Series operate under difficult operation conditions with minimal cavitation and noise. They are made of the highest quality materials suitable for different mining applications.



### Features and Benefits

- Designed to stand up to the toughest conditions
  - Tamper resistant
  - Excellent anti-cavitation properties
  - Wide flow range
  - High stability and accuracy
  - Drip tight sealing
- Double chamber actuator design
  - Protected diaphragm
  - Provide rapid response to sudden changes in system conditions
  - Simplified maintenance as it can be removed as a single unit. In-line serviceable
- Flexible design - Easy addition of optional features
- Obstacle free flow path

### Major Additional Features

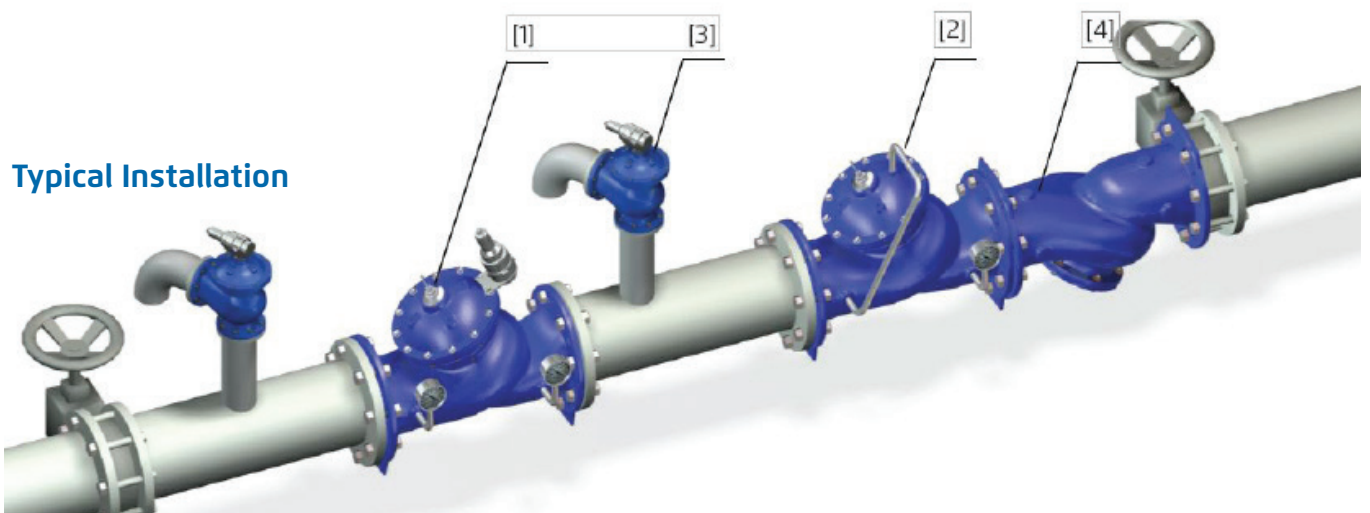
- ON/OFF Solenoid Control - **720 - PD - 55**
- Opening and closing speed control - **720 - PD - 03**
- Emergency pressure reducing valve - **720 - PD - 59**
- Pressure Sustaining - **723 - PD**
- Hydraulic check valve - **720 - PD - 20**

See relevant BERMAD publications

### List of Components:

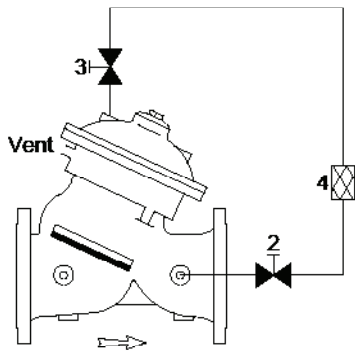
- [1] Pressure Reducing Valve MN-720
- [2] Pressure Reducing Valve, Proportional Type MN-720-PD
- [3] Pressure Relief Valve MN-73Q
- [4] Strainer MN-70F

### Typical Installation





### Control Schematic (\*)



#### Standard Configuration

- 1 2W Isolation Valve
- 2 2W Isolation Valve
- 4 Control Filter

#### Additional features (OPTIONAL)

- F Large Control Filter
- F1 Extra Large Control Filter
- V V-Port Plug
- 6 Pressure Gauge
- I Visual Position Indicator
- S Electric Limit Switch

(\*) As a reference only. Components may vary based on valve's size and class

### Operation

- The Model 720-PD: pilotless double chambered control valve. Its downstream pressure is applied as the closing force on the top side of both the diaphragm and the seal disk areas. The upstream pressure is applied as the opening force on the bottom side of the seal disk area.
- The net force, resulting from the two opposing dynamic forces acting on the actuator's diaphragm and seal, determines the degree to which the valve is open. The valve seeks the point where these forces are equal. As the ratio of the areas of the seal disk and the diaphragm is constant, the ratio of the upstream and downstream pressures is constant as well.
- A rise in downstream pressure causes a momentary increase of the closing force. As a result, the valve throttles closed reducing downstream pressure according to the constant ratio.
- A drop in downstream pressure causes a momentary decrease of the closing force. As a result, the valve throttles open increasing downstream pressure according to the constant ratio.
- Adding a V-Port Throttling Plug modifies valve ratio by increasing the effective diaphragm area. When demand is zero, downstream pressure rises in proportion to the ratio, causing the valve to shut off.

### Reduction Ratios Table

Valve Size		700	
Inches	mm	Flat Disc	V-Port
1.5", 2", 2.5"	40, 50, 65	3.7	4.0
3"	80	2.6	2.9
4"	100	2.5	2.8
6"	150	2.5	2.7
8"	200	2.4	2.6
10"	250	2.3	2.5
12"	300	2.2	2.4
14"	350	2.2	2.4
16"	400	2.2	2.3
18"	450	2.2	2.3
20"	500	2.2	2.3

### Pressure Rating

	Class 150			Class 300		
Max. Recommended Pressure	250 PSI			400 PSI		
Available End Connection	Flanged ANSI#150	Grooved ANSI/AWWA C606	Threaded	Flanged ANSI#300	Grooved ANSI/AWWA C606	Threaded

### Materials

Components		Water Applications	Thermal Shock Applications	Base Solutions Applications	Acid Solutions Applications (**)
Main Valve	Body & Cover	Ductile Iron	Carbon Steel	Ductile Iron	Stainless Steel 316
	Internals	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel 316
		Brass/Coated Steel	Brass/Coated Steel	Coated Steel	
	Elastomers	Synthetic rubber	Synthetic rubber	Synthetic rubber	Viton
Coating	Fusion Bonded Epoxy	Fusion Bonded Epoxy	Fusion Bonded Epoxy	Uncoated	
Control Loop Accessories	Accessories	Brass/Bronze	Stainless Steel 316	Stainless Steel 316	Stainless Steel 316
	Tubing & Fittings	Brass	Stainless Steel 316	Stainless Steel 316	Stainless Steel 316

(\*\*) For highly aggressive acid solutions: Super Duplex, Hastelloy C-276, SMO-254 6-MO. Others by request.

#### Notes:

- Recommended continuous flow velocity: 0.1-6m/sec; 0.3-20ft/sec
- Minimum operating pressure: 0.7 bar / 10 PSI
- For lower pressure requirements consult factory.

