

# Booster Pump Control and Pressure Sustaining Valve

## Active Check Valve

### Model MN-743

Hydraulic active check pump control valve that opens or shuts off in response to electric signals. The valve isolates the pump from the system during pump startup and shutdown, thereby preventing pipeline surges. While open, it sustains minimum discharge pressure regardless of fluctuating flow.

Bermad 700 Series valves are hydraulic pilot operated, oblique pattern, globe valves with a seat assembly and double chambered 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 high flow capabilities. They are made of the highest quality materials suitable for different mining applications.



### Features and Benefits

- Self-operated valves that can work without an external source of power, just a command is needed
- Electric controlled
  - Low power consumption
- Hydrodynamic wide globe valve body provides:
  - Higher flow (Kv;Cv) than standard globe valves
- Check feature (spring loaded type)
  - Replaces line sized check valve
  - Fail-safe mechanical closure
- Designed to stand up to the toughest conditions
  - Tamper resistant
  - High stability and accuracy
  - Drip tight sealing
- Double chamber actuator design
  - Protected diaphragm
  - 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

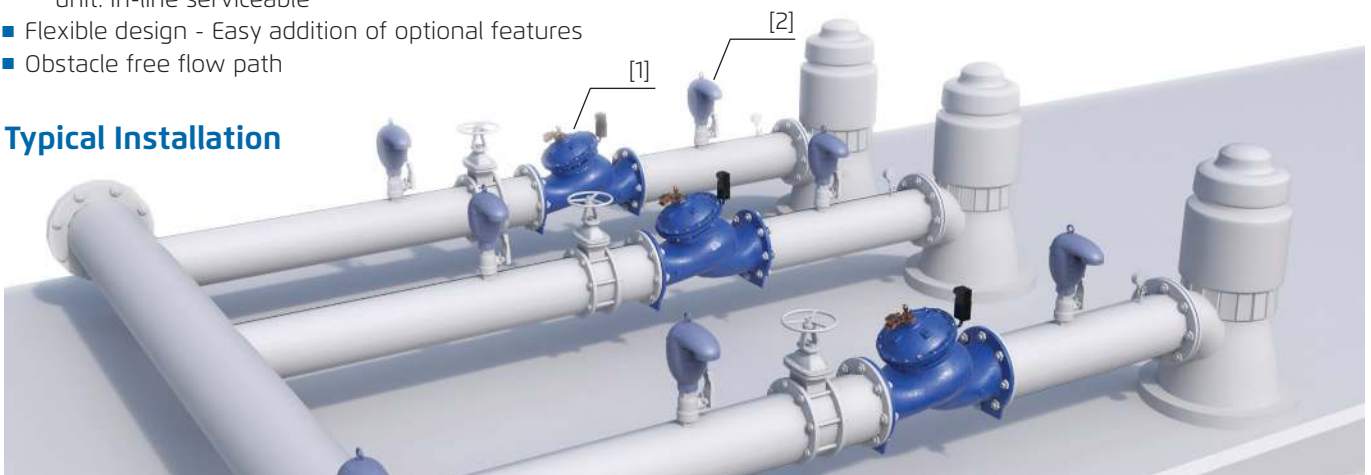
### Major Additional Features

- Booster Pump Control Valve and Pressure Sustaining Valve with Independent Lift Check – **743-25**
- Pump differential pressure sustaining – **743-06**
- Electronic control – **743-18**
- Pressure sustaining & Pressure reducing – **743-20**

### List of Components:

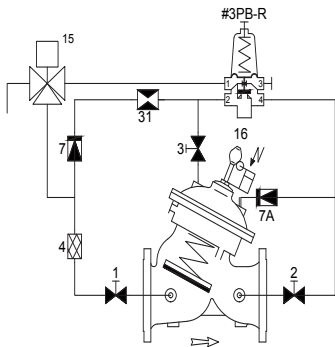
- [1] Pump Control and Pressure Sustaining Valve MN-743
- [2] Combination Air Valve C70

### Typical Installation





## Control Schematic (\*)



### Standard Configuration

- 1/3 2W Isolation Valve
- 4 Control Filter
- 7/7A Check Valve
- 15 Solenoid / Motorized Ball Valve
- 16 Limit Switch
- 31 Restriction Orifice
- #3PB-R 2W Pressure Sustaining Pilot

### Additional features (OPTIONAL)

- V V-Port Plug
- F Large Control Filter
- F1 Extra Large Control Filter
- 6 Pressure Gauge
- Q Position Transmitter 4-20 mA

(\*) As a reference only. Components may vary based on valve's size and class. For poor quality fluids, motorized ball valve option is highly recommended

## Sequence of Operation

### Pump Starting Procedure

- When pump starts, valve upstream pressure rises above the system static pressure, allowing the valve to open gradually.
- The upper control chamber pressure is released to valve outlet through the pilot sustaining pilot, allowing the valve to gradually open.
- If as a result of valve opening, the pump discharge pressure drops to pilot setting, the pressure sustaining pilot throttles causing the main valve to throttle, and sustaining upstream pressure at pilot setting.

### Pump Stopping Procedure

- While the pump is still working, and the shut-down command is issued, first, the solenoid - or the motorized ball valve MVB - applies pumped pressure to the upper control chamber. Then, the main valve starts to close isolating the running pump from the system.
- When valve is almost closed, its limit switch is activated and it shuts down the pump.

### Power Failure

- If electric power fails during pumping, valve works immediately as a check valve, closing before the flow can change direction.

## Pilot Options

Various pilots and calibration springs are available. Select according to valve size and operation conditions. For more details check pressure sustaining pilots product page

Adjustment Ranges	PSI	Bar
	11-150	0.7-10
	15-230	1-16
	30-430	2-30



## Electrical Data

### Solenoid Data:

**Voltages:**  
(AC): 24, 110, 220  
(DC): 12, 24, 110, 220  
**Power Consumption:** (AC): 30VA, inrush; 15VA (8W) holding  
(DC): 8W

### Motorized Ball Valve Data:

**Voltages:**  
(AC): 24, 110, 220  
(DC): 24  
**Power Consumption:**  
(AC/DC): 45W

## Pressure Rating & End Connections

	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
Solenoid	Coating	Fusion Bonded Epoxy	Fusion Bonded Epoxy	Fusion Bonded Epoxy	Uncoated
	Body	Brass	Brass	Stainless Steel 316	Stainless Steel 316
	Internals	Stainless Steel	Stainless Steel	Stainless Steel 316	Stainless Steel 316
	Elastomers	Synthetic rubber	Synthetic rubber	Synthetic rubber	Viton
Motorized Ball Valve	Body/Internals	Stainless Steel 316	Stainless Steel 316	Stainless Steel 316	Stainless Steel 316
	Elastomers	Synthetic rubber	Synthetic rubber	Synthetic rubber	Viton
Pilot	Body	Brass/Bronze	Stainless Steel 316	Stainless Steel 316	Stainless Steel 316
	Internals	Brass/Stainless Steel	Stainless Steel	Stainless Steel 316	Stainless Steel 316
	Elastomers	Synthetic rubber	Synthetic rubber	Synthetic rubber	Viton
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:

- Pump pressure and flow rate are required for optimal sizing.
- Maximum recommended flow velocity: 6m/sec; 18ft/sec. Intermittent: 7.5m/sec; 21ft/sec.
- Minimum operating pressure: 0.7 bar / 10 PSI. For lower pressure requirements consult factory.

