

# PROPORTIONAL PRESSURE REDUCING VALVE

## Model IR-120-DC-PD-Z

The BERMAD Model IR-120-DC-PD-Z Proportional Pressure Reducing Valve is a double chambered, hydraulically operated, diaphragm actuated, Pilot-Less control valve that reduces higher upstream pressure to lower downstream pressure, at a fixed ratio. The valve comprises two major components: The body and the actuator assembly. The actuator assembly consists of both an upper and a lower control chamber.

The double chambered valve operation is independent of valve differential pressure. This develops maximum power, ensuring immediate valve response combined with inherent non-slam closing.



- [1] BERMAD Model IR-120-DC-PD-Z Reduces the supply pressure at a constant ratio, protecting the system
- [2] BERMAD Pressure Sustaining Valve Model IR-130-DC-XZ
- [3] BERMAD Solenoid Control Valves Model IR-210
- [4] BERMAD Combination Air Valve Model IR-C10
- [5] BERMAD Kinetic Air Valve Model IR-K10
- [6] BERMAD RF RTU Battery Operated with Solar Kit

### Features & Benefits

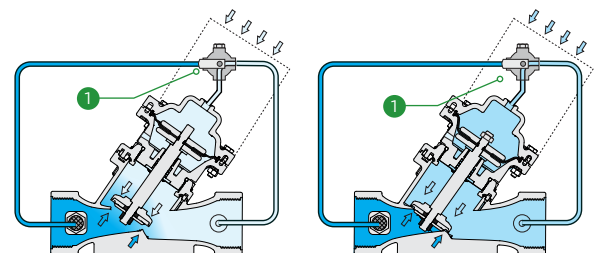
- Hydraulic Double chamber Control Valve
  - Line pressure driven
  - Full powered opening and closing
  - Protected diaphragm
  - Non-slam closing characteristic
- Elegant simplicity
  - Most cost effective
  - Simple to maintain
  - No Pilot nor control Accessories
- Engineered Plastic Valve with Industrial Grade Design
- hYflow 'Y' Valve Body with "Look Through" Design
  - Ultra-high flow capacity - Low pressure loss
- User-Friendly Design
  - Simple in-line inspection and service

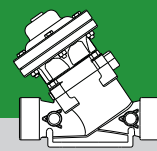
### Typical Applications

- Pressure Reducing Stations
- Long downhill lines
  - Serial pressure reduction
  - Leakage and burst protection
- High differential pressure systems
  - Protection against cavitation damage
  - Throttling noise reduction

### Operation:

The downstream pressure is applied as closing force on the top side of both the diaphragm and the seal disk areas. The upstream pressure is applied as 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. 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. When demand is zero, downstream pressure rises in proportion to the reduction ratio, causing the valve to shut off. The Manual Selector Valve ① allows manual closing of the valve.





**Technical Data**

**Pressure Rating:**  
10 bar; 145 psi

**Operating Pressure Range:**  
0.5-10 bar; 7-145 psi

**Materials:**

**Body, Cover and Plug:**  
Polyamid 6 & 30% GF

**Diaphragm:**  
NR, Nylon fabric reinforced

**Seals:** NR

**Spring:** Stainless Steel

**Cover Bolts:** Stainless Steel

**Actuator:**  
Composite Material &  
Stainless Steel

**Reduction Ratios**

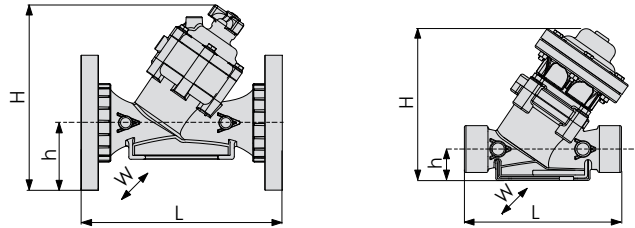
Reduction Ratio at Flow Velocity  
of 2-3m/s; 6-10f/s: 3.3

Valve Size		Reduction Ratio
1½" & 2"	DN40 & DN50	3.3
2"L, 2½" & 3"	DN50L, DN65 & DN80	2.7

**Technical Specifications**

**Y Pattern Valves Dimensions & Weights**

For [BERMAD](#) angle, dual & T pattern,  
Please see our full engineering page.



Size Inch; DN	1½"; 40	2"; 50	2"; 50	2"L; 50L	2½"; 50L	3"; 80	3"; 80	3"L; 80L		4"; 100			
End Connections	Rc (BSP.T), NPT	G (BSP.F)	Rc (BSP.T), NPT	Rc (BSP.T), NPT	G (BSP.F)	Rc (BSP.T), NPT	Universal Flanges		Rc 3 (BSP.T)	Universal Flanges			
							Metal	Plastic	3" NPT	Metal	Plastic	Metal	Plastic
L (mm)	200	200	230	230	230	298	308	308	298	308	308	350	350
H (mm)	194	196	196	220	220	232	277	277	356	395	395	407	407
h (mm)	40	40	40	43	43	55	100	100	60	100	100	112	112
W (mm)	126	126	126	135	135	135	200	200	210	210	210	224	224
CCDV (lit)	0.13	0.13	0.13	0.17	0.17	0.17	0.17	0.17	0.55	0.55	0.55	0.55	0.55
Weight (Kg)	1.7	1.7	1.7	2.2	2.2	2.3	5.1	3.2	5.95	7.35	6.45	9.45	7.55

CCDV = Control Chamber Displacement Volume • **BSP.T** = Internal Threaded • **BSP.F** = External Threaded  
• Other End Connections are available on request. For dimensions and weights of adapters or valve with adapters please consult with customer service

**Flow Properties**

Sizes	Inch DN	1½" 40	2" 50	2L" 50L	2½" 65	3" 80	3"L 80L	4" 100
KV		50	50	100	100	100	200*	200*

**Valve Flow Coefficient**

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

$Kv = m^3/h @ \Delta P \text{ of } 1 \text{ bar}$   
 $Q = m^3/h$   
 $\Delta P = \text{bar}$

**Flow Chart**

