



# PRESSURE REDUCING VALVE

## Model IR-420-55-3W-KX

The BERMAD Pressure Reducing Valve with solenoid control is a hydraulically operated, diaphragm actuated control valve that reduces higher upstream pressure to lower constant downstream pressure regardless of fluctuating demand, and opens fully upon line pressure drop. It either opens or shuts in response to an electric signal.



- [1] BERMAD Model IR-420-55-3W-KX opens in response to electric signals, and establishes reduced pressure zone protecting laterals and distribution line.
- [2] Hydrometer Model IR-900-M0-Magnetic Drive
- [3] Combination Air Valve Model IR-C10
- [4] Combination Air Valve Model IR-C30
- [5] Smart Irrigation Controller-OMEGA

### Features & Benefits

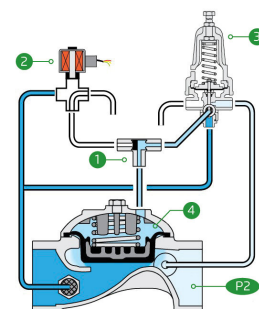
- Hydraulic Pressure Control with Solenoid Control
  - Line pressure driven
  - Protects downstream systems
  - Opens fully upon line pressure drop
  - Electrically controlled On/Off
- Advanced Hydro-Efficient Globe Design
  - Unobstructed flow path
  - Single moving part
  - High flow capacity
- Fully Supported & Balanced Diaphragm
  - Requires low actuation pressure
  - Excellent low flow regulation performances
  - Progressively restrains valve closing
  - Prevents diaphragm distortion
- User-Friendly Design
  - Easy pressure setting
  - Simple in-line inspection and service

### Typical Applications

- Automated Irrigation Systems
- Pressure Reducing Systems
- Systems Subject to Varying Supply Pressure
- Remote and/or Elevated Plots
- Distribution Centers

### Operation:

The Shuttle Valve [1] hydraulically connects the Solenoid [2] or the Pressure Reducing Pilot (PRP) [3] to the Valve Control Chamber [4]. When the solenoid is closed, the PRP commands the valve to throttle closed should Downstream Pressure [P2] rise above setting, and to open fully when it drops below setting. In response to an electric signal, the solenoid switches, directing line pressure through the shuttle valve into the control chamber. This causes the valve to shut. The solenoid also features local manual opening/closing override.





### Technical Data

**Pressure Rating:**  
150 psi

**Operating Pressure Range:**  
7-150 psi

#### Materials

**Body & Cover:**  
Cast Iron

**Diaphragm:**  
NR, Nylon fabric reinforced

**Spring:**  
Stainless Steel

*\*Other materials are available on request*

#### Control Loop Accessories

**PR Pilot:** PC-SHARP-X-P

**Pilot Spring Range:**

Spring	Spring Color	Setting range
J	Green	3-25 psi
K	Gray	7-43 psi
<b>N</b>	<b>Natural</b>	<b>12-95 psi</b>
V	Blue & White	15-150 psi

*Standard spring - marked in bold*

**Tubing and Fittings:**  
Polyethylene and Polypropylene

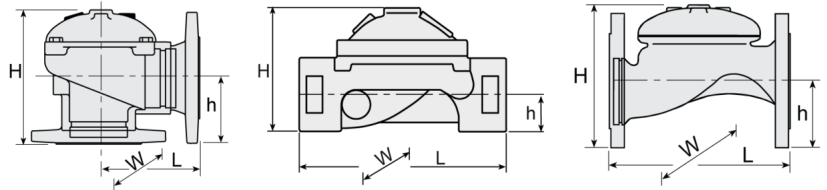
**AC solenoid:**  
S-390-T-3W

**DC latch solenoid:**  
S-392-T-3W P.B

*\*For other solenoids and pilots please consult [BERMAD](#)*

### Technical Specifications

For other end connection types,  
Please refer to [BERMAD](#) full engineering page.



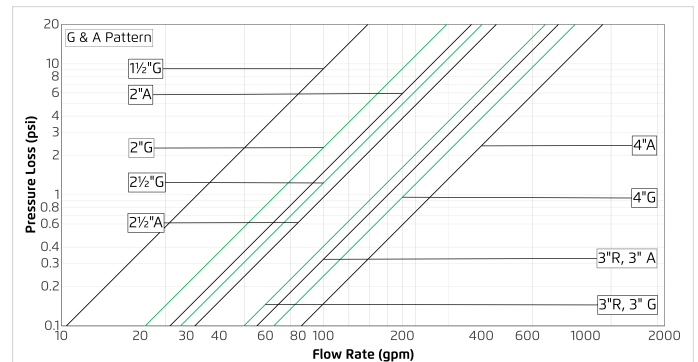
Size	Pattern	End Connection	Weight (Lb)	L (in)	H (in)	h (in)	W	CCDV (Gal)	CV
1" ; DN25	Globe	Threaded	2.4	4%	2 3/4	1 3/8	2 7/8	0.005	15
1 1/2" ; DN40	Globe	Threaded	4.4	6%	3%	1 1/4	3%	0.016	33
2" ; DN50	Globe	Threaded	8.8	7%	4 1/2	1 1/2	4%	0.03	66
2" ; DN50	Globe	Flanged	19.8	8%	6%	3%	6%	0.03	66
2" ; DN50	Globe	Grooved	11	8%	4%	1 1/4	4%	0.03	66
2" ; DN50	Angle	Threaded	9.7	3 1/2	5%	2 1/2	4%	0.03	82
2" ; DN50	Angle	Flanged	19.8	4%	7%	3%	6%	0.03	82
2 1/2" ; DN65	Globe	Threaded	12.6	8%	5%	1%	5%	0.05	90
2 1/2" ; DN65	Globe	Flanged	23.1	8%	7	3 1/2	7	0.05	90
2 1/2" ; DN65	Angle	Threaded	12.8	4%	7%	3%	5%	0.05	102
3R" ; DN80R	Globe	Threaded	12.9	8%	5 1/2	2%	5%	0.08	157
3R" ; DN80R	Globe	Flanged	28	8%	7%	4	7%	0.08	157
3R" ; DN80R	Angle	Threaded	15.4	4%	7	3%	5%	0.08	176
3" ; DN80	Globe	Threaded	28.7	10%	6 1/2	2 1/4	6%	0.08	157
3" ; DN80	Globe	Flanged	41.9	9%	8%	4	7%	0.08	157
3" ; DN80	Globe	Grooved	23.4	9%	6%	1%	6%	0.08	157
3" ; DN80	Angle	Threaded	24.3	4%	7%	3%	6%	0.08	176
3" ; DN80	Angle	Flanged	37.5	6%	8%	4	7%	0.08	176
3" ; DN80	Angle	Grooved	22.1	4%	11	3%	6%	0.08	176
4" ; DN100	Globe	Flanged	61.7	12%	9%	4 1/2	8%	0.18	236
4" ; DN100	Globe	Grooved	35.7	12%	7%	2 1/2	8	0.18	236
4" ; DN100	Angle	Flanged	57.3	6%	8 3/4	4 1/2	8%	0.18	260
4" ; DN100	Angle	Grooved	35.3	6%	8 3/4	4 1/2	8%	0.18	260

CCDV = Control Chamber Displacement Volume • **Threaded** = BSP & NPT are available.

#### Additional Features

Code	Description	Size Range
Z	Manual Selector - SY3	1 1/2"-4"
I	Position Indicator Assembly	1 1/2"-4"
M	Flow Stem	1 1/2"-4"
5	Plastic Test Point	1 1/2"-4"

#### Flow Chart



#### Differential Pressure & Flow Calculation

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

$C_v$  = gpm @  $\Delta P$  of 1 psi  
 $Q$  = gpm  
 $\Delta P$  = psi