

Bermad Valves

Micro-Irrigation



Application:

Bermad plastic and metal control valves have cutting edge features which ensure optimum performance and high efficiency over a long life cycle. The valves are designed to provide control solutions for irrigation projects in micro irrigation, sprinklers, pump control and other applications. This versatile family of valves provides a full range of sizes, pressure ratings and options to meet the demands of today's most complex irrigation systems.

Performance:

- **Flow range 35 to 2400 GPM**
- Operating pressure range 5 to 230 psi
- Valve sizes from 1½" to 10"
- Hydraulically operated diaphragm valves with 3 way control

Options:

- Manual on/off or Electric on/off
- Pressure Reduction- maintains constant downstream pressure
- Pressure Sustaining- maintains constant upstream pressure
- Quick Pressure Relief- minimizes damage from water hammer
- Options can be combined to create the optimum valve for each application

Features:

- Valve body and diaphragm design results in low friction loss and low energy use
- User friendly design allows in-line maintenance and simple service
- Engineered materials provide chemical resistance for long life
- Diaphragms operate under low flow conditions with excellent regulation performance
- Regulating pilots are responsive to small pressure changes, enabling constant, accurate control



Plastic Valves

- Engineered plastic valves for light weight and corrosion resistance
- Threaded or articulated flange valves available for easy installation
- All typical irrigation options available



Metal Valves

- Iron valves with weather resistant coating provide durability
- Threaded or flanged connections available
- All possible valve configurations available

High-Performance Plastic Valves

Made from industrial grade, durable glass-filled nylon, Bermad plastic valves are engineered to withstand rough service conditions and are resistant to cavitation and chemical attack. The Y pattern valve body together with a one piece diaphragm provides a look through passage resulting in ultra high flow capacity and minimal friction loss.



Features	Benefits
Lightweight construction	Easy to ship and move in portable irrigation systems
Chemically resistant engineered plastic	Provides long life in harsh environments and corrosive injection applications.
Remote control through a wide range of electric solenoids or hydraulic command.	Saves labor and optimizes water application through accurate scheduling
Low friction losses	Reduced energy cost
Low flow and low pressure operation	Maintains peak uniformity in systems with flow and pressure variations

	Plastic	Manual	Electric	Pressure Reducing	Pressure Sustaining	Low Friction Loss	Low Maintenance
105 Series	•	•				•	•
110 Series	•	•	•			•	•
120 Series	•	•		•		•	•
12055 Series	•	•	•	•		•	•
130 Series	•	•			•	•	•

Hydraulic Control Metal Valves

At the leading edge of control valve design, Bermad metal valves combine simple and reliable construction with superior performance. The diaphragm performs under all service conditions with no distortion from uneven hydraulic forces or pressure surges. These automatic control valves are designed for operation in vertical and horizontal installations and can be configured to solve most irrigation control applications.



Features	Benefits
Metal construction of the valve and pilots	Metal valves and components offer structural strength where long term reliability is essential
230 PSI operating pressure	Strength to withstand high pressure or water hammer risk
Remote control with a wide range of electric solenoid or hydraulic controls.	Saves labor and optimizes water application through accurate scheduling
Available in sizes 1½" through 10"	Wide range of sizes and flows enables matching valves to system requirements
Stable regulation at low flows and high differential pressures	Enables system to operate at peak irrigation uniformity

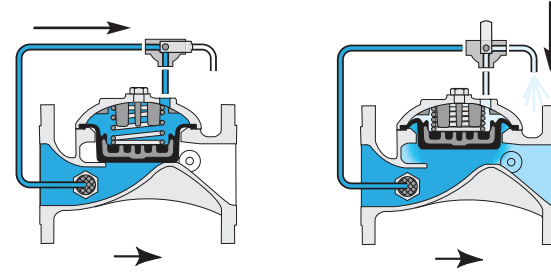
	Metal	Manual	Electric	Pressure Reducing	Quick Pressure Relief	Low Friction Loss	Low Maintenance
405 Series	•	•				•	•
410 Series	•	•	•			•	•
420 Series	•	•		•		•	•
42055 Series	•	•	•	•		•	•
43Q Series	•				•	•	•



Principles of Operation

On/off Control

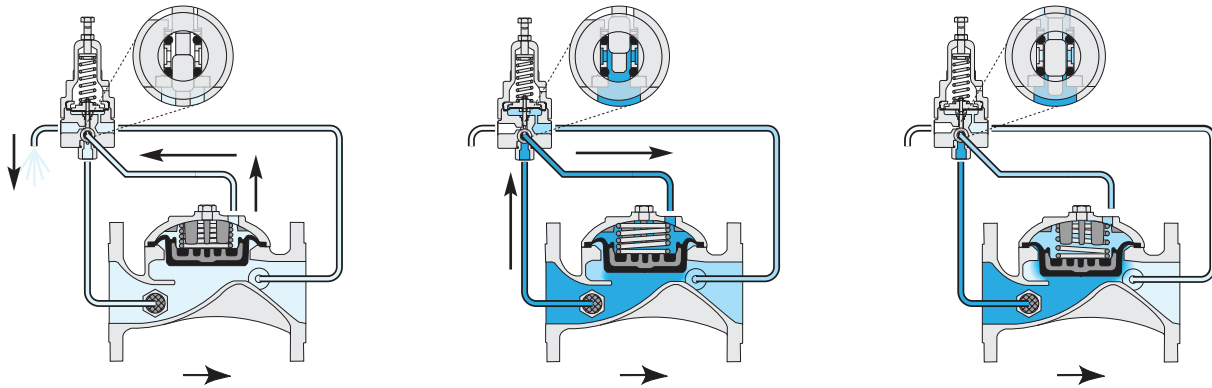
Application: On/off manual, electric or hydraulic command for master valve and zone control. In the diagram a manual 3-way selector is shown controlling the valve. A solenoid or hydraulic relay can be substituted to allow electric or hydraulic operation.



Line pressure applied to the control chamber of the valve creates a hydraulic force that moves the valve to the closed position. Discharging pressure from the control chamber to atmosphere allows the line pressure to push the diaphragm up, thus opening the valve

Pressure Reduction 3-Way Control

Application: Reduction of upstream pressure to a lower constant downstream pressure. Adjustable pressure reducing valves optimize the performance of pressure sensitive emission devices by providing constant operating pressure.



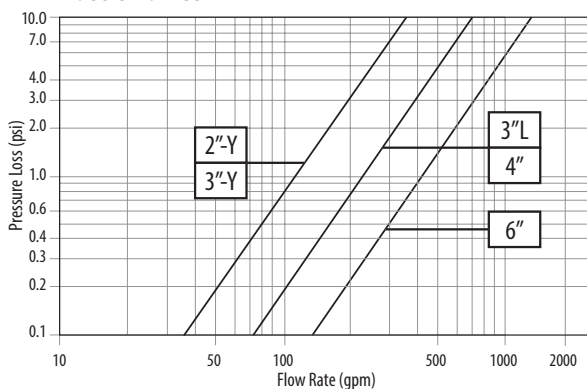
Fully Open Position When upstream pressure drops, the pilot blocks the upstream pressure sensing port and opens the drain port, venting the control chamber to the atmosphere. This fully opens the valve, minimizing head loss.

Adjusting To Close When upstream pressure rises, the pilot blocks the drain port and opens the supply pressure port. This pressurizes the control chamber, forcing the valve to modulate closed.

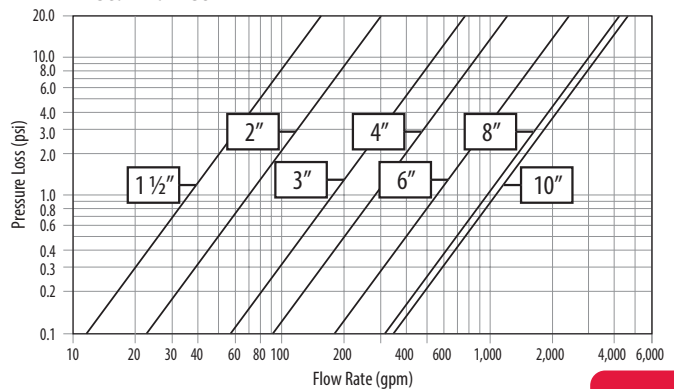
Locked Position When sensed pressure is equal to set point, the pilot blocks both the drain and the upstream pressure sensing ports. This locks the pressure in the control chamber, freezing the diaphragm in its last position until conditions change.

Friction Loss Charts

Plastic Valves



Metal Valves



Plastic Control Valves

Standard Configuration:

- Plastic Valve Y configuration (Y)
- Pressure Rating: Minimum operating 5 psi, Maximum inlet 145 psi
- Connections: Threaded 2" thru 3" NPT (NP)
- Plastic articulated flange 4" thru 6" (FF)
- 2" thru 6" valves are constructed using plastic tubing, fittings and plastic mini pilots
- 2" thru 3" valves have flow control stem
- Manual, electric and hydraulic valves are normally closed (NC)

Flow Ranges

Valve Size	Flow Rate GPM	
	From	To
2"	35	140
3"	35	300
3L"	75	580
4"	75	580
6"	140	1000



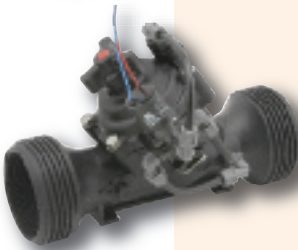
105 Series -

Manual control, hydraulic actuation with 3-way selector

Threaded - NPT (NP)			Flanged - Plastic - (FF)	
2"	3"	3"L	4"	6"
B105-Z-02-Y-NP	B105-Z-03-Y-NP	B105-Z-03L-Y-NP	B105-Z-04-Y-FF	B105-Z-06-Y-FF

Manual selector standard

Application: Manual command for master valve and zone control.



110 Series -

Electric control, manual override on solenoid

Threaded - NPT (NP)			Flanged - Plastic - (FF)	
2"	3"	3"L	4"	6"
B110-3W-02-Y-NP	B110-3W-03-Y-NP	B110-3W-03L-Y-NP	B110-3W-04-Y-FF	B110-3W-06-Y-FF

Standard solenoid: S-400-3W 24VAC-R

Application: Electrically controlled valve for computerized irrigation systems and conventional timer controlled systems. The 110 series electric valves are ideal for master valve and zone control applications.



120 Series -

Pressure reducing, manual control with 3-way selector

Threaded - NPT (NP)			Flanged - Plastic - (FF)	
2"	3"	3"L	4"	6"
B120-XZ-02-Y-NP	B120-XZ-03-Y-NP	B120-XZ-03L-Y-NP	B120-XZ-04-Y-FF	B120-XZ-06-Y-FF

Standard pilot: model PC-X-P plastic mini pilot for 7-40 psi downstream pressure.*

Manual selector standard

Application: The 120 series valves protect downstream components from erratic and high pressures. Adjustable reducing valves optimize performance, of pressure sensitive emission devices by providing constant operating pressure

Electrical Specifications:

3-Way Solenoid with plastic base for 2" thru 6" 110 or 12055 plastic valves

Part Number	Voltage	Normally Open/Closed	Inrush (Amp)	Holding (Amp)	Power (Watt)
S400-3W-24VAC-R (standard)	24VAC	NO	0.6	0.3	3.5
S400-3W-12 VDC	12VDC	NO	0.33	0.33	4.0
S400-3W-24VAC-R-NC	24VAC	NC	0.6	0.3	3.5

Add optional solenoid part number to the end of valve part number to receive pre-installed non standard solenoids

Solenoid Note: Normally Open (NO) solenoids are used to construct normally closed valves. Normally Closed solenoids are used to construct normally open valves. Manually actuated valves may be converted to normally open or normally closed by arrangement of the hydraulic control connections.

Plastic Control Valves



12055 Series - Pressure reducing, electric control

Threaded - NPT (NP)			Flanged - Plastic - (FF)	
2"	3"	3"L	4"	6"
B12055-X-02-Y-NP	B12055-X-03-Y-NP	B12055-X-03L-Y-NP	B12055-X-04-Y-FF	B12055-X-06-Y-FF

Standard pilot: model PC-X-P plastic mini pilot for 7-40 psi downstream pressure.*
Standard solenoid: S-400-3W 24VAC-R

Application: Pressure reducing, electric valves combine the features of electric control and adjustable pressure reduction. The 12055 establishes a reduced pressure zone to optimize emission device performance.



130 Series - Pressure sustaining, manual control with 3-way selector

Threaded - NPT (NP)			Flanged - Plastic - (FF)	
2"	3"	3"L	4"	6"
B130-XZ-02-Y-NP	B130-XZ-03-Y-NP	B130-XZ-03L-Y-NP	B130-XZ-04-Y-FF	B130-XZ-06-Y-FF

Standard pilot: model PC-X-P plastic mini pilot for 7-40 psi upstream pressure.*
Manual selector standard

Application: Sustaining valves are used to relieve excess line pressures and to protect systems with erratic supply pressures. Sustaining valves, maintains preset minimum upstream pressure during fluctuating flows or varying pressure conditions. Normally open pressure sustaining valves are used to maintain adequate upstream pressures during filter back flushing and line filling.

Pilot Spring Options:

For Plastic Valves with model PC-X-P plastic mini pilots (*)

	Spring Code	Operating Range
To add a pre-installed optional pilot spring to plastic valves. Add the correct spring code to the end of the valve part number.	-K	7-40 psi Standard
	-N	11-95 psi
	-H	15-100 psi

Optional Pilot springs may be required for different pressure ranges. Choose an optional pilot spring when valves operate outside the range of the standard spring.

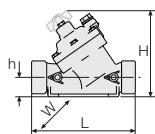
Pilot and Copper Tube Options:

For plastic valves

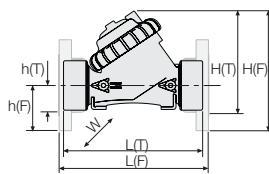
Option	Option Code
Brass fitting and copper tubing upgrade	-CB
Brass Pilot	-R
To upgrade add the option code to the end of the part number	

Plastic Globe Pattern Valves Dimensions and Weights

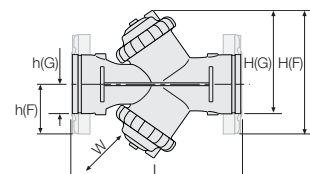
Size	Threaded			Flanged	
	2"	3"	3"L	4"	6"
L (inch)	9 1/6	11 3/4	12 1/8	13 3/4	18 7/8
H (inch)	7 5/6	7 11/6	10 1/6	11 5/6	11 1/4
h (inch)	1 5/6	1 15/6	3 15/6	4 7/6	5 11/6
W (inch)	5 5/6	5 5/6	7 7/6	8 13/6	15 3/6
Weight(lb)	3	4	8	11	27



2", 3", 3"L NPT



4" Flanged



6" Y Boxer

Other valve options and configurations are available.
For inquires, please contact Toro Micro-Irrigation Customer Service.



Metal Control Valves

Standard Configuration:

- Cast Iron Globe configuration (G)
- Pressure Rating: Minimum operating 10 psi, Maximum inlet 230 psi
- Connections: Threaded 1 1/2" thru 3" NPT (NP) - Iron flanged 4" thru 10" (A1)
- 3" thru 4" valves are constructed using plastic tubing, fittings and plastic mini pilots
- 6" thru 10" valves and 1 1/2" thru 3" Quick Relief valves are constructed using copper tubing and brass pilots

Flow Ranges

Valve Size	Flow Rate GPM	
	From	To
3"	60	400
4"	90	700
6"	180	1400
8"	310	2200
10"	340	2400

- Pressure check points and outlet isolation ball valves are furnished on metal pressure reducing valves
- Manual, electric and hydraulic valves are normally closed (NC)

405 Series -

Manual control, hydraulic actuation with 3-way selector



Threaded - NPT (NP)		Flanged (A1)		
3"	4"	6"	8"	10"
B405-Z-03-G-NP	B405-Z-04-G-A1	B405-Z-06-G-A1	B405-Z-08-G-A1	B405-Z-10-G-A1

Manual selector standard

Application: Manual command for master valve and zone control. Manual valves may be easily upgraded.

410 Series -

Electric control, manual override on solenoid



Threaded - NPT (NP)		Flanged (A1)		
3"	4"	6"	8"	10"
B410-X-03-G-NP	B410-X-04-G-A1	B410-X-06-G-A1	B410-X-08-G-A1	B410-X-10-G-A1

Standard solenoid: 3" thru 4" metal valves S-400-3W-24VAC-R : 6" thru 10" metal valves ASC-3W24VAC-NO

Application: Electrically controlled valve for computerized irrigation systems and conventional timer controlled systems. The 410 series electric valves are ideal for master valve and zone control.

420 Series -

Pressure reducing, manual control with 3-way selector

Reduces upstream pressure to lower constant downstream pressure.

Manual on/off with 3 way selector.



Threaded - NPT (NP)		Flanged (A1)		
3"	4"	6"	8"	10"
B420-XZ-03-G-NP	B420-XZ-04-G-A1	B420-XZ-06-G-A1	B420-XZ-08-G-A1	B420-XZ-10-G-A1

Standard pilot: 3" thru 4" metal valves- model PC-X-P plastic mini pilot for 7-40 psi downstream pressure.(*)

Standard pilot: 6" thru 10" metal valves- model X brass pilot for 7-150 psi downstream pressure.(#)

Application: The 420 series pressure reducing valves protect downstream components from erratic and high pressure. Adjustable pressure reducing valves optimize performance of pressure sensitive emission devices by providing constant operating pressure.

Electrical Specifications:

3-Way Solenoid with plastic base for 3" thru 4" 410, 42055 metal valves.

Part Number	Voltage	Normally Open/Closed	Inrush (Amp)	Holding (Amp)	Power (Watt)
S400-3W-24VAC-R (standard)	24VAC	NO	0.6	0.3	3.5
S400-3W-12 VDC	12VDC	NO	0.33	0.33	4.0
S400-3W-24VAC-R-NC	24VAC	NC	0.6	0.3	3.5

3-Way Solenoid with metal base for 6" thru 10" 410 and 42055 metal valves

Part Number	Voltage	Normally Open/Closed	Inrush (Amp)	Holding (Amp)	Power (Watt)
ASC-3W24VAC-NO (standard)	24VAC	NO	1.25	0.66	6.1
ASC-3W12VDC-NO	12VDC	NO	-	-	10.6
ASC-3W24VAC-NC	24VAC	NC	1.25	0.66	6.1

Add optional solenoid part number to the end of valve part number to receive pre-installed non standard solenoids
Other solenoid options available upon request.



Metal Control Valves



42055 Series -

Pressure Reducing, Electric control

Threaded - NPT (NP)		Flanged (A1)			
3"	4"	6"	8"	10"	
B42055-X-03-G-NP	B42055-X-04-G-A1	B42055-X-06-G-A1	B42055-X-08-G-A1	B42055-X-10-G-A1	

Standard solenoids: 3" thru 4" metal valves S-400-3W-24VAC-R : 6" thru 10" metal valves ASC-3W24VAC-NO
 Standard pilot: 3" thru 4" metal valves model- PC-X-P plastic mini pilot for 7-40 psi downstream pressure.(*)
 Standard pilot: 6" thru 10" metal valves- model- X brass pilot for 7-150 psi downstream pressure.(#)

Application: Pressure reducing, electric 42055 metal valves combine the features of electric control and adjustable pressure reduction. The 42055 establishes a continuous, reduced pressure zone to optimize emission device performance.



43Q Series -

Quick Pressure Relief, relieves excessive line pressure by immediately opening when preset line pressure is met.

Threaded - NPT (NP)		
1 1/2"	2"	3"
B43Q-015-G-NP	B43Q-02-G-NP	B43Q-03-G-NP

Application: The 43Q adjustable quick pressure relief valves provide systems with protection from excessive pressure. Quick relief valves are located at the irrigation headwords or other positions where water hammer may occur due to rapid valve closure, power failure or erratic pressure situations. 43Q valves eliminate momentary peak pressure spikes and are often used to protect sand media filters. Globe (G) is the standard configuration for 43Q valves. The Angle (A) configuration is also available.

Pilot Spring Options:

For Plastic Valves with model PC-X-P plastic mini pilots (*)

	Spring Code	Operating Range
To add a pre-installed optional pilot spring to plastic valves. Add the correct spring code to the end of the valve part number.	-K	7-40 psi Standard
	-N	11-95 psi
	-H	15-100 psi

Optional Pilot springs may be required for different pressure ranges. Choose an optional pilot spring when valves operate outside the range of the standard spring.

For Metal Valves with model X Brass pilots (#)

	Spring Code	Operating Range
To add a pre-installed optional pilot spring to 3" thru 4", 420 and 42055 series metal valves add correct spring code to the end of the valve part number.	-10	7-150 psi Standard
	-16	15-230 psi

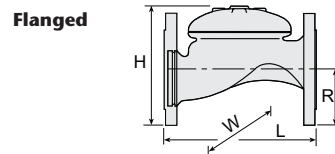
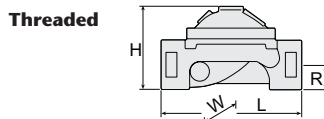
Pilot and Copper Tube Options:

For 3" thru 4" Metal Valves

Option	Option Code
Brass fitting and copper tubing upgrade	-CB
Brass Pilot	-R
To upgrade 3" thru 4" metal valves add the option code to the end of the part number	

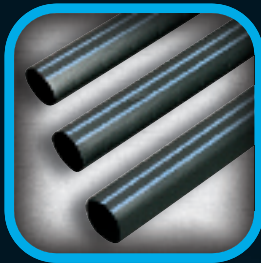
Metal Globe Pattern Valves Dimensions and Weights

Size	Threaded			Flanged			
	1 1/2"	2"	3"	4"	6"	8"	10"
L (inch)	6	7 1/6	10	12 5/8	16 3/6	19 1/6	23 1/6
H (inch)	3 3/8	5	6 1/2	9 1/2	13 3/6	16 1/6	18 1/8
W (inch)	3 3/8	4 1/6	6 1/6	8 3/4	12	14 3/8	15 1/6
R (inch)	1 1/8	1 1/2	2 3/6	4 1/2	5 1/2	6 1/6	7 1/6
Weight(lb)	5	9	29	62	150	276	309



Other valve options and configurations are available.
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