IRRIGATION CONTROL VALVES

CONTROL VALVES

IBERMAD

Company Profile

BERMAD, since its inception in 1965, designs, develops, manufactures and markets control valves. BERMAD implements control systems and solves problems in the areas of water, petroleum and fire protection. All of the company's products are original products, designed by our team of engineers in accordance with the needs of the market. The company is considered one of the world leaders in its field and as such has a global presence on each continent and in most countries.

BERMAD actively provides solutions for complete systems as well as individual components for fluid control and management systems in the following market segments:

- *Irrigation systems*
- *Agricultural*
- *Commercial*
- *Residential*
- *Waterworks & Industrial systems*
- *Building Complexes*
- *Fire protection systems*
- *Petroleum systems*
- *Water Metering*

BERMAD continues to develop, manufacture and market a wide range of fluid control and management products that are sought, sold and serviced in nearly every country and every language. These products include:

- *Automatic control valves; from 1 1/2" to 24" and pressure ratings up to 40 bar (600 psi)*
- *Pressure-reducing valves*
- *Pressure-relief valves*
- *Reservoir and level valves*
- *Surge-prevention valves*
- *Pump-protection valves*
- *Water meters*
- *Automatic metering valves and hydrometers*
- *Solenoid pilot valves*
- *Air valves*

BERMAD uses the ISO 9001 quality assurance system. The quality control and quality assurance departments are integral to our factory process. A hydraulic testing facility, among the worlds largest, field condition tests 100% of the products leaving our plant gates.

BERMAD'S production and assembly facilities are located in several countries with the aim of providing service and products to our customers quickly. Among the certificates held by our company are ISO 9001, NSF, WRAS, UL and FM.

Quality Assured Firm
SI
ISO 9001

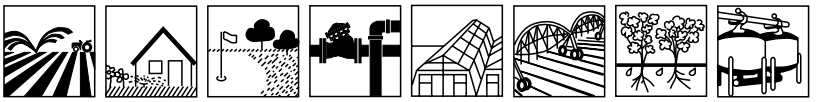
The engineering staff of the R&D department, using the latest CAD/CAM technology, diligently upgrades our existing products and develops new ones.

The applications engineering department technicians and engineers provide advice, planning and problem solving for our customers. Service personnel and spare parts inventories, help ensure reliable and long lived performance

BERMAD's team of international and local experts is available everywhere for consultation and for training - in seminars and in the field - of engineers, technicians, sales staff and end users.

A multitude of satisfied customers worldwide testify that BERMAD is one of the world's foremost suppliers of valves for irrigation and other systems.

Selection Chart and Table of Contents



	Applications / Products	Sprinkler Irrigation	Home Gardening	Turf and Golf Courses	Water Supply Systems	Greenhouses	Irrigation Machines	Drip-Irrigation Systems	Filtration Systems	Page
	200 Series Plastic Hydraulic/ Electric Control Valves	●	●	●		●		●		2
	300 Series Metal Body Hydraulic/ Electric Control Valves	●	●	●	●	●	●	●	●	5
	350 Series Filter Backwash Hydraulic Valves	●			●	●		●	●	8
	400 Series "RAM" Hydraulic Diaphragm Control Valves	●		●	●	●	●	●	●	12,14
	R Series "RAM HYDRANT" 3" Hydraulic Control Valves	●		●		●	●	●	●	17
	900 Series Hydrometer/Watermeters Automatic Metering Valves	●	●	●	●	●	●	●	●	20
	MT Series "BERMADON" Automatic Metering Valves		●			●		●		26
	PRV Series Direct Acting Pressure Reducing Valves	●	●	●		●	●	●		28
	AR Series Air and Vacuum Release Valves	●		●	●	●	●	●	●	32
	S Series Solenoid Pilot Valves	●	●	●		●	●	●	●	36
	PC Series Hydraulic Pilot Valves	●	●	●	●	●	●	●	●	38
	FT Series Plastic Control Tube Fittings	●	●	●	●	●	●	●	●	40
	700 Series Hydraulic Diaphragm Control Valves	●		●	●		●	●	●	41

Conversion Table, see back cover

200 Series
PLASTIC HYDRAULIC / ELECTRIC CONTROL VALVES
For residential, commercial and agricultural irrigation systems

The **BERMAD 200 Series** plastic control valves range from 3/4" to 2" in size, in either globe or angle pattern. These control valves provide superior hydraulic performance, constituting as they do, the state-of-the-art in hydraulics and in plastic technology.

FEATURES

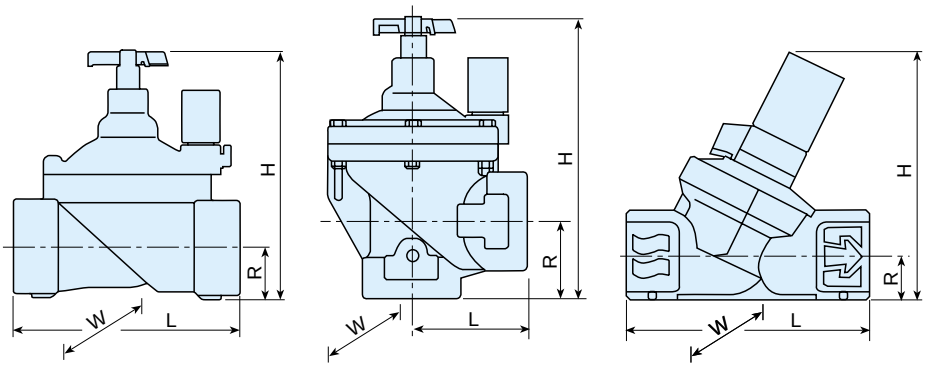
- Constructed of corrosion-resistant, high engineering plastics, synthetic rubber and stainless steel parts.
- Very high flow rate with very low head loss.
- Operation over a wide range of pressures.
- Smooth valve opening and closing prevents pressure surge hazards.
- Self-cleaning orifice on electric models provides reliable valve operation, even with brackish water.
- Flow control handle for water flow adjustment.
- Manual solenoid override for opening valves in case of power failure without external water spill.
- High performance solenoid with low electrical power consumption.
- Wide range of models of electric and pressure regulating control valves.

TECHNICAL DATA

Specifications

- **Valve Pattern:** globe, angle & Y-pattern (1" only)
- **Sizes:** 3/4", 1", 1 1/2" & 2"
- **End Connections:**
  – female threaded BSP, NPT
- **Pressure Rating:**
  ISO: PN 10
  ANSI: Class 125
- **Operating Pressure Range:**
  0.7-10 bar (10-150 psi)
- **Temperature Range:**
  Water up to 80°C (180°F)
- **Electrical Data:**
  – **Standard:**
  Voltage: 24V AC (50-60 Hz)
  Current: holding 0.20A,
  inrush 0.40A
  – **Optional Voltages:** 6V DC, 12V DC, 24V DC, 12V AC, 24V AC
- **Materials:**
  Body and cover: Nylon Reinforced
  Metal parts: Stainless Steel
  Diaphragm: Natural Rubber
  Seals: Buna-N and NR

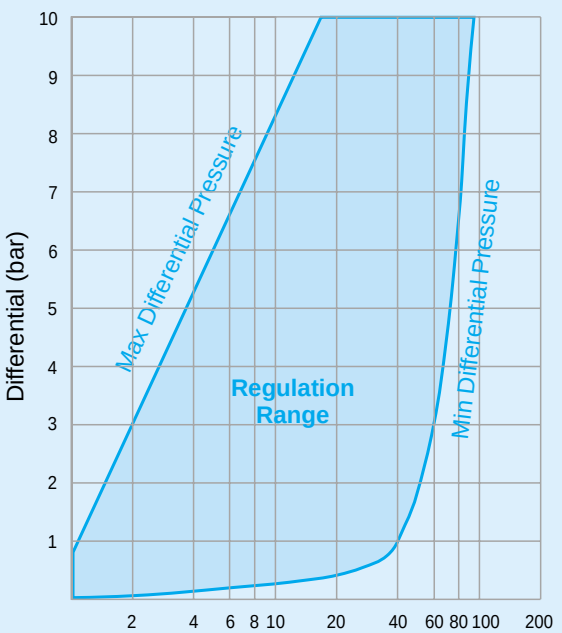
Dimensions and Weights



	Globe Pattern				Angle Pattern		Y Pattern
Size (mm)	**3/4"**	**1"**	**1 1/2"**	**2"**	**1 1/2**	**2"**	**1"**
L	110	110	160	170	80	85	114
H	115	115	180	190	190	210	115
R	22	22	35	38	40	60	21
W	78	78	125	125	125	125	68
Weight (kg)*	0.35	0.33	1.0	1.1	0.95	0.91	0.30

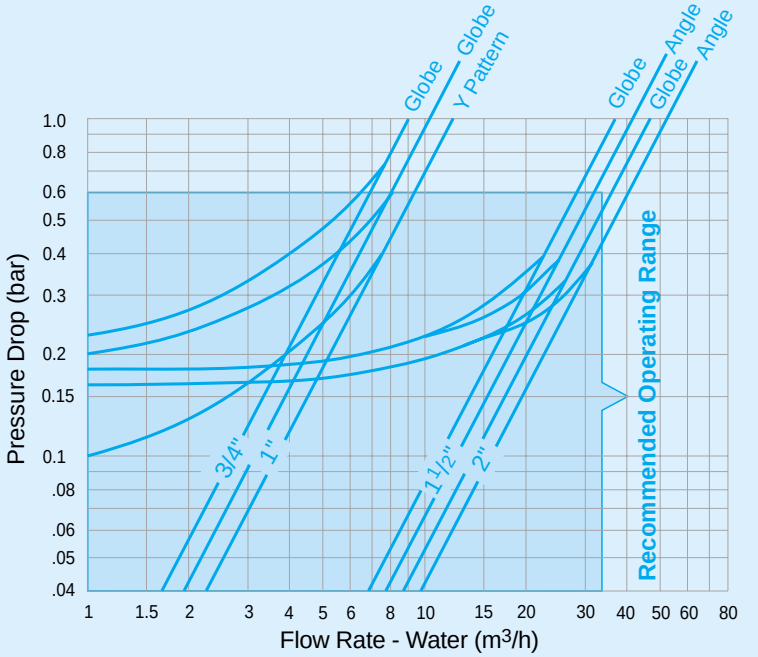
* Without flow control handle

Regulation Range



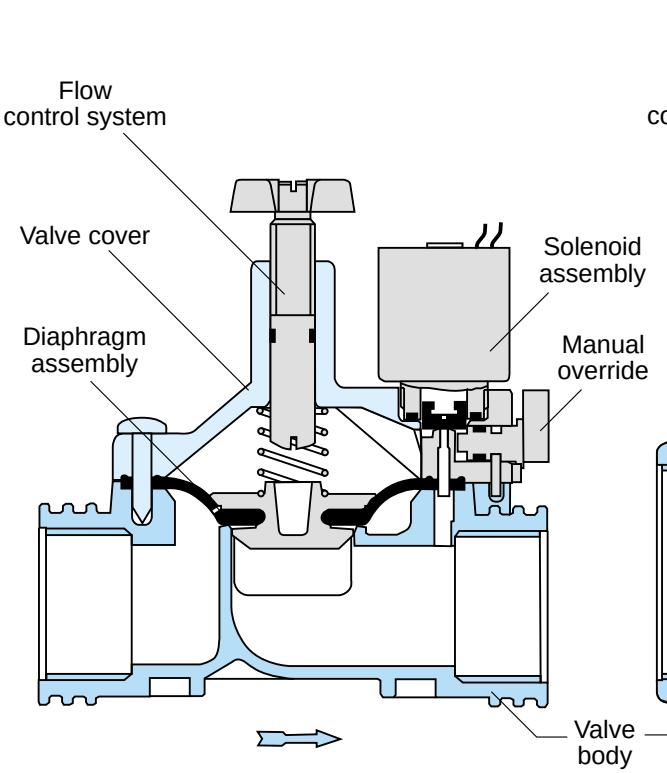
1 1/2" and 2" sizes only

Flow Chart

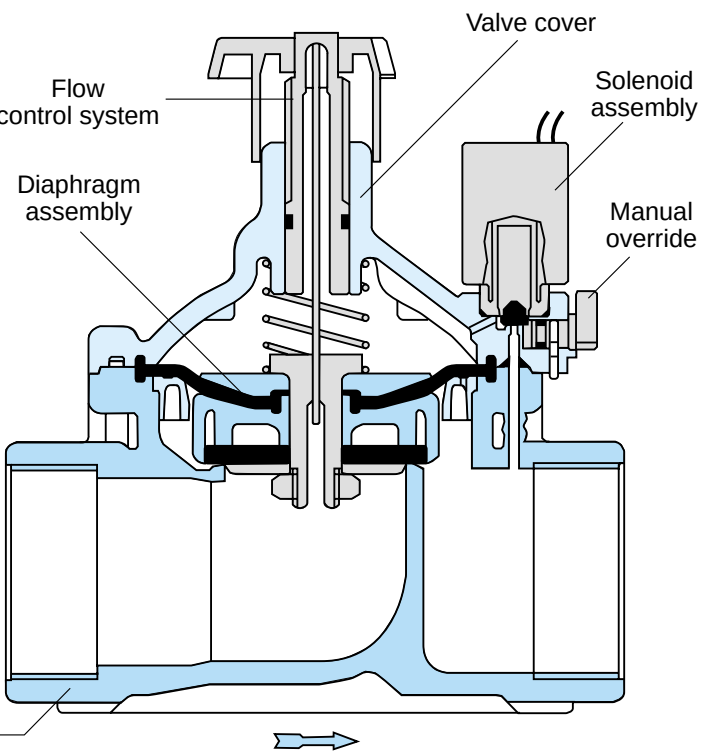


Straight lines – fully open valve
Curved lines – electric valve (2-way)

HYDRAULIC/ELECTRIC CONTROL VALVE ASSEMBLY



1" Valve



1 1/2" and 2" Valve

AVAILABLE MODELS

Model 205
Hydraulic Control Valve
Model 205 is a hydraulically operated control valve, requiring a pressure command to close.

Model 210
Electric Control Valve
Model 210 has a 2-way solenoid pilot valve with manual override. The valve is N.C. (normally closed), requiring electrical energy to open.

Model 220 (1 1/2" and 2" only)
Pressure Reducing Control Valve
Model 220 reduces high upstream pressure to lower set downstream pressure.

Model 220-55 (1 1/2" and 2" only)
Pressure Reducing and
Electric Control Valve
Model 220-55 combines Model 220 with electric remote control.

300 Series

METAL BODY HYDRAULIC / ELECTRIC CONTROL VALVES

For agriculture, turf and waterworks

The **BERMAD 300 Series** Y-pattern and angle, diaphragm-actuated control valves are available in 1 1/2", 2" and 3" sizes. This control valve provides high flow capacity with versatile and accurate double-chambered actuator.

The valve can be operated in three options:

- Hydraulic or electric On/Off remote control valve.
- Pressure reducing or pressure sustaining/relief control valve.
- Combination of the two first options.

FEATURES

- Y-pattern body, which provides high flow with low head losses.
- Hydraulically operated by double-chambered diaphragm actuator, which provides high versatility of applications and a cushioned, no-slam closure.
- Low sensitivity to dirt.
- On/Off operation as well as throttling operation.
- Capable of operating at very low pressure with standard diaphragm, due to its double-chambered actuator.
- Convertible into one of a wide range of pressure regulators: pressure reducing, pressure sustaining/relief control valves.
- All pressure regulators are available as combinations of various regulation functions, remote control, etc.
- Can be installed in any position.

3"
Y-pattern

2"
Angle

2"
Y-pattern

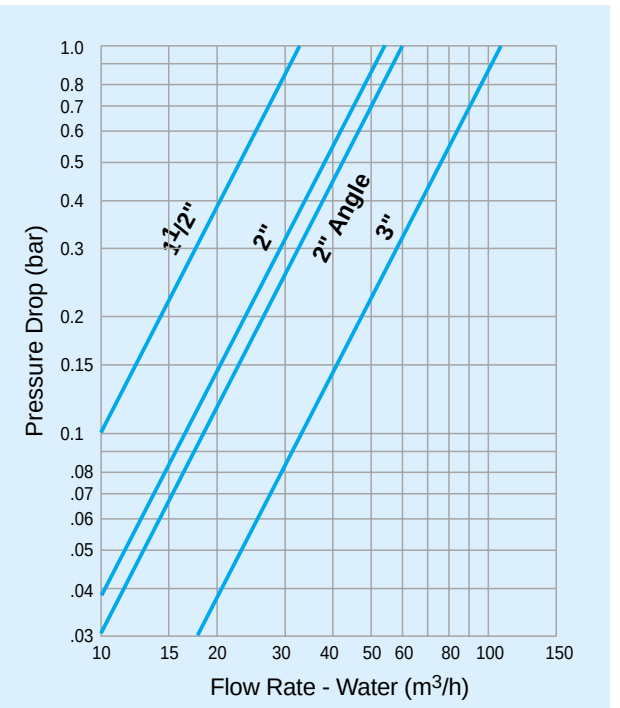
TECHNICAL DATA

Specifications

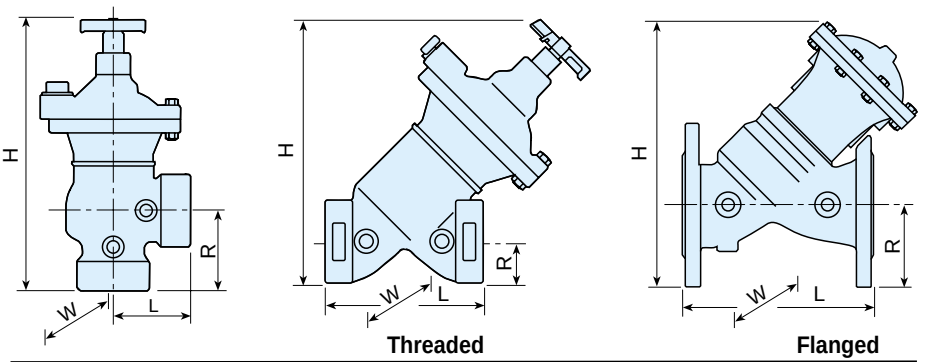
- **Valve Configuration:**
  Y-pattern and angle
- **Sizes:**
  Y – Y-pattern: 1 1/2", 2" & 3"
  A – Angle: 2"
- **End Connections:**
  – 1 1/2" & 2": threaded BSP, NPT
  – 3": female threaded NPT/BS or flanged to ISO/BS-D/ANSI
- **Operating Pressure Range:**
  0.7-10 bar (10-150 psi)
- **Temperature Range:**
  Water up to 80° C (180°F)
- **Materials:**
  Body: (1 1/2" & 2") Brass,
  (3") Polyester-coated Cast Iron
  Actuator: Plastic, Brass and Stainless Steel
  Diaphragm: Nylon-fabric, Reinforced Natural Rubber
  Seals: Buna-N and NR

Pilot Valves and Control Accessories:
refer to PC series, page 38

Flow Chart



Dimensions and Weights



Size (mm)	1 1/2"	2"	2" Angle	3"	3"
L	112	124	71	210	235
H	175	215	256	275	325
W	105	125	135	160	200
R	30	40	75	58	98
Weight (kg)	1.25	2.0	2.25	7.4	14.7

TYPICAL APPLICATIONS

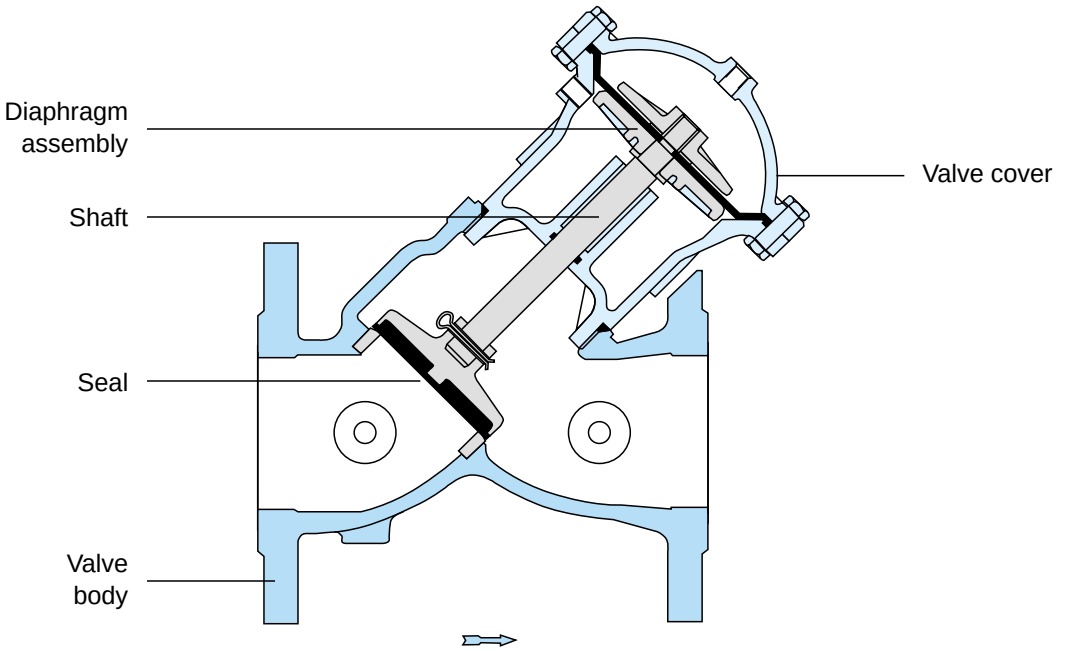
Model 300
Hydraulic Control Valve
Model 300 is a hydraulically operated control valve, requiring a pressure command to close.

Model 310
Electric Control Valve
Model 310 has a 3-way solenoid pilot valve with manual override.
Standard: N.C. (normally closed), requiring electrical energy to open.
Option: N.O.

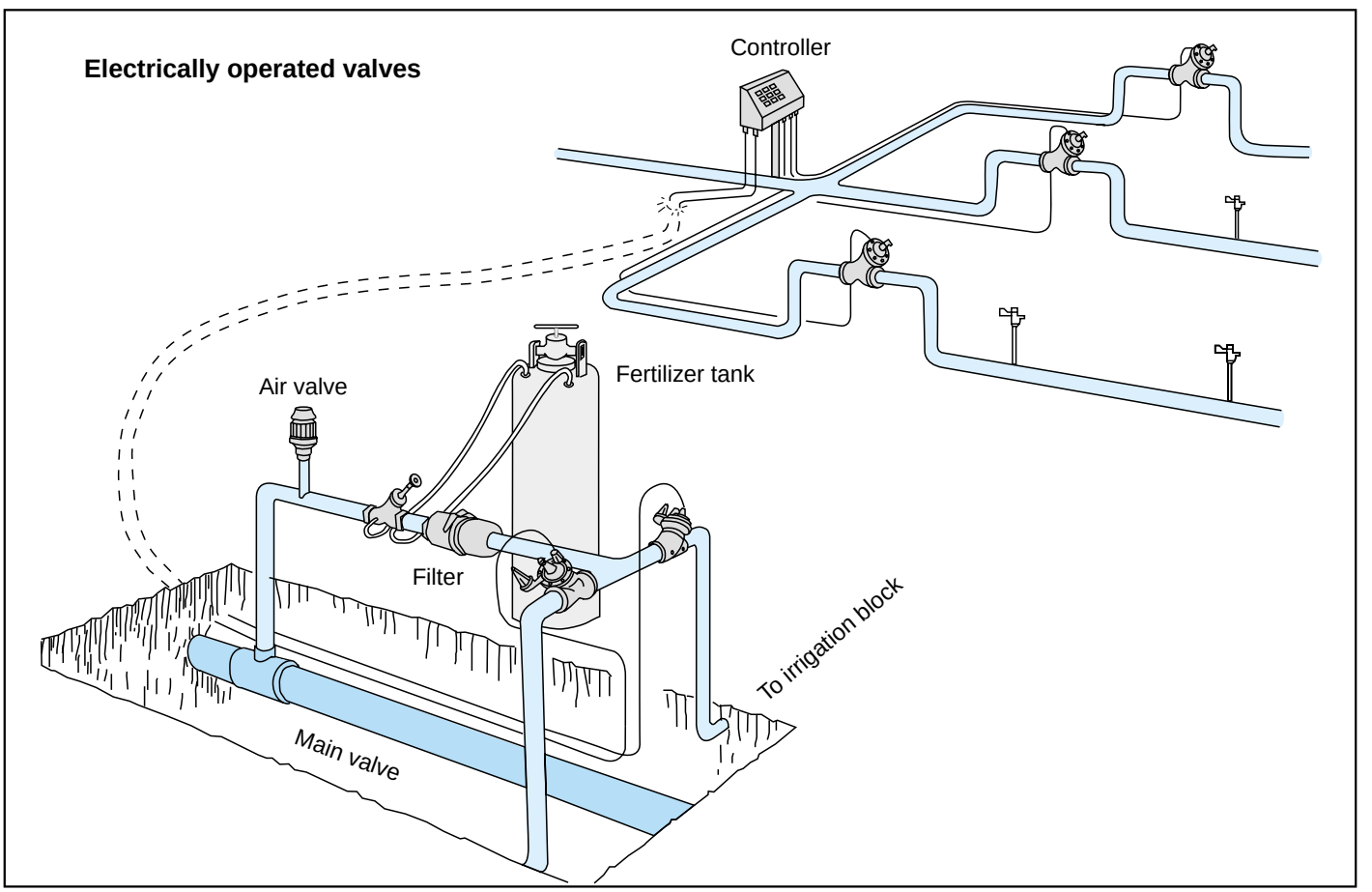
Model 320
Pressure Reducing Control Valve
Model 320 reduces high upstream pressure to lower set downstream pressure.

Model 320-55
Pressure Reducing and Electric Control Valve
Model 320-55 combines Model 320 with electric remote control.

VALVE ASSEMBLY



TYPICAL APPLICATIONS



350 Series

FILTER BACKWASH HYDRAULIC VALVES Patented

For filter systems

The **Bermad 350 Series** patented Filter Backwash Hydraulic Valves are suited for automatic backwashing of filtration systems.

They are diaphragm-actuated, compact, 3-port valves, in the Tee configuration. Their simple construction and few parts ensure smooth operation and long, trouble-free service. The diaphragm-actuated plug assembly keeps the supply port closed while opening the backwash port and vice-versa. Short travel guarantees smooth changes of flow direction, conserves water supply, prevents filter site flooding and eliminates mixing of supply and waste water. At the end of its stroke, the 350 Series seals the port drip-tight. Incorporating Bermad's time-proven control valve technology and high performance standards, the 350 Series has no bearings to service and no intricate rolling diaphragms to replace.

The 350 Series valve is available in two models:

- **Single-Chambered Type** - suited for angle pattern flow requirements
- **Double-Chambered Type -** suited for straight and angle pattern flow requirements

FEATURES

- Closes supply port before opening drain port and vice-versa; supply to the filter resumes only after sealing the drain port
- Smooth change of flow direction
- No waste of supply water
- Drip-tight closure of either the supply or the drain port
- High flow capacity
- Can be installed in various orientations

Double-Chambered Types
2" x 2" & 3"x 3"

Single-Chambered Types
3" x 2", 4"x 3" & 4"x 4"

TECHNICAL DATA

Specifications

Valve Pattern: globe & angle

Sizes: 2" x 2", 3" x 2", 3" x 3, 4" x 3" & 4" x 4"

End Connections:
- Grooved: all sizes
- Flanged: 3" x 2" & 4" x 3"
- Threaded: 2" x 2"

Operating Pressure Range:
- Single-Chambered Type: 0.7-16 bar (10-225 psi)
- Double-Chambered Type: 0.7-10 bar (10-150 psi)

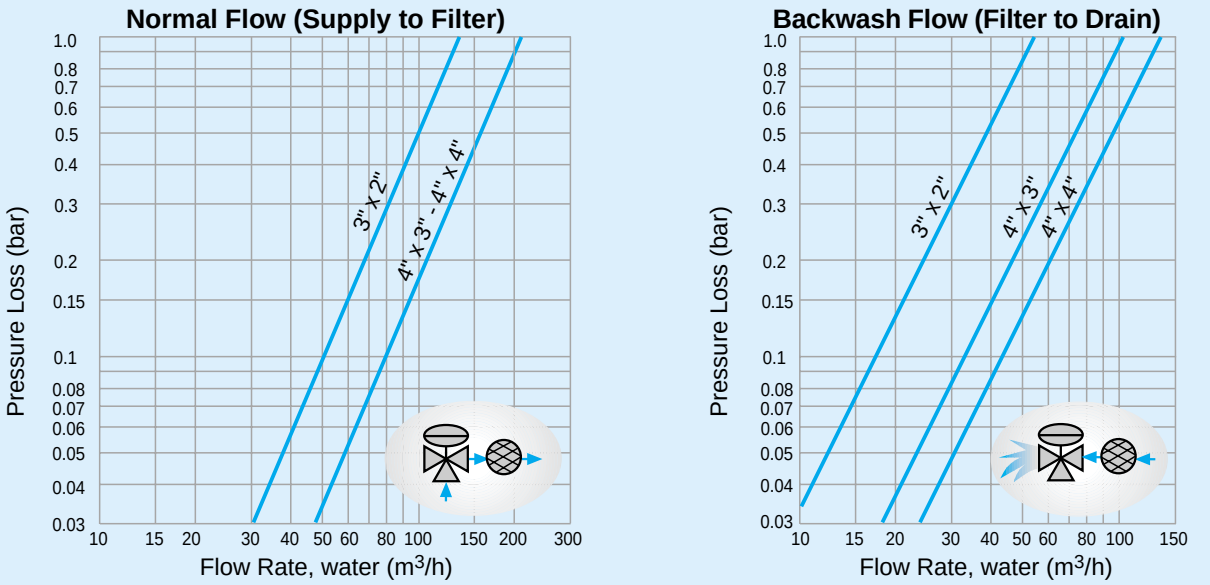
Temperature Range:
Water up to 80°C (180°F)

Materials:
- Body: 2" x 2" Brass, all other sizes: Polyester-or Epoxy/coated Cast Iron
- Actuator (2" x 2" & 3" x 3"): Plastic
- Cover (3" x 2", 4" x 3" & 4" x 4": Polyester-coated Carbon steel
- Seats: Bronze
- Spring (for Double-Chambered Type only): Stainless steel
- Sealing Assembly: Delerin and Brass
- Diaphragm: NR reinforced with Nylon-fabric
- Seals: NR or NBR

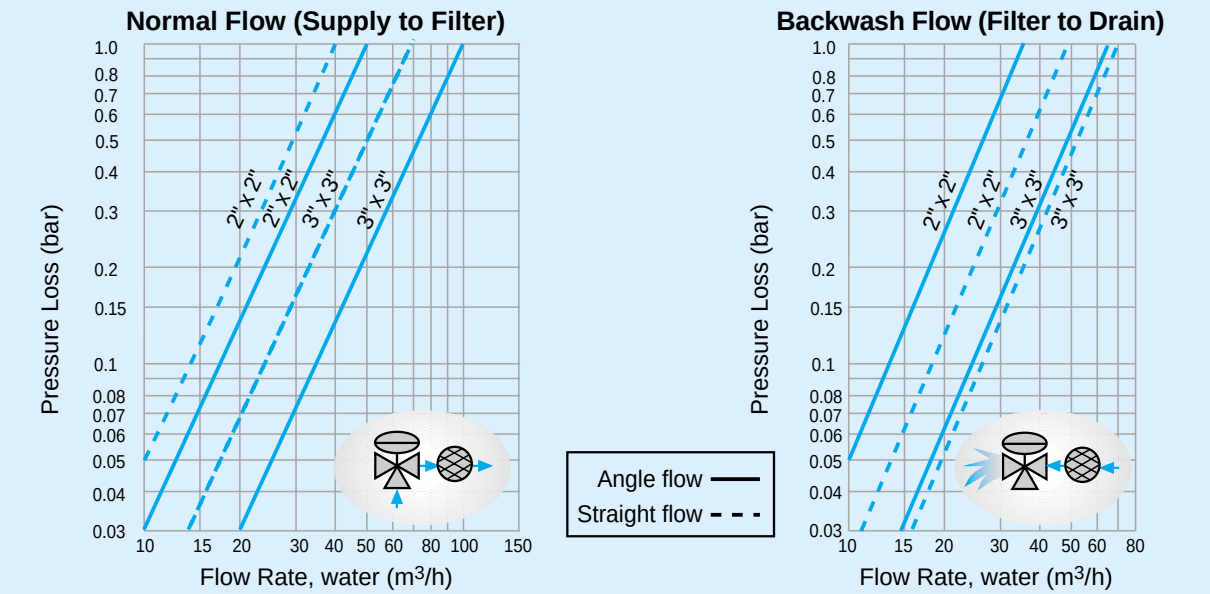
Control Chamber Displacement

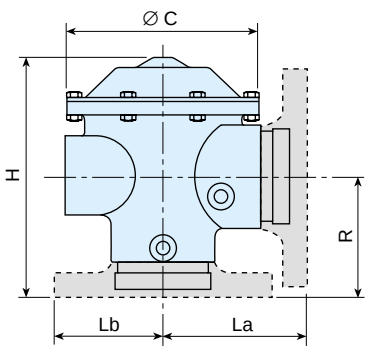
Valve	Size	Displacement in Liters
Single Chambered	3" x 2"	0.55
	4"x 3"	1.55
	4"x 4"	1.55
Double Chambered	2" x 2"	0.13 in both chambers
	3" x 3"	0.34 in lower-chamber - angle flow
		0.34 in upper-chamber - straight flow

Pressure Loss Characteristics for Single-Chambered Type



Pressure Loss Characteristics for Double-Chambered Type





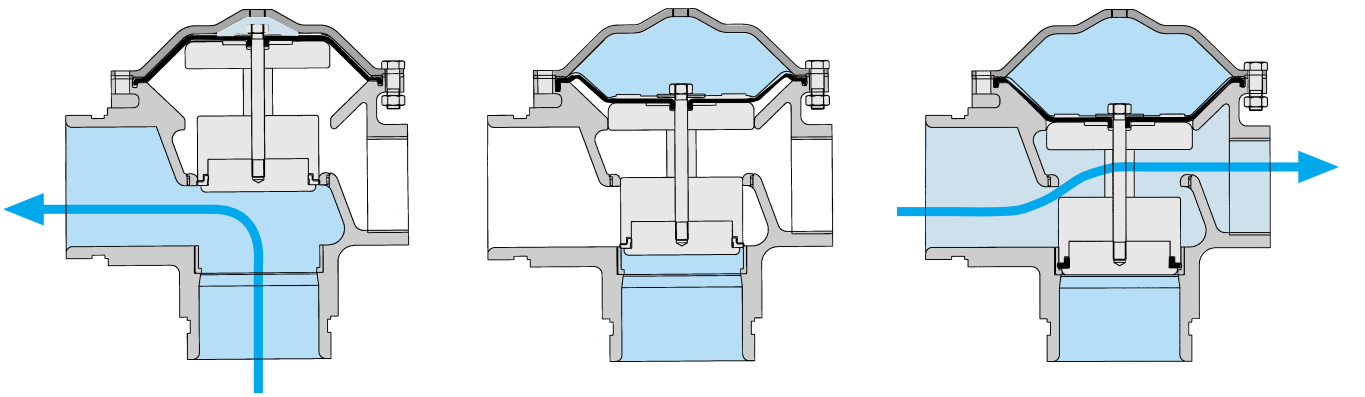
Dimensions and Weights

Size (mm)	**2" x 2"**		**3" x 2"**		**3" x 3"**	**4" x 3"**		**4" x 4"**
	Threaded	**Grooved**	**Flanged**	**Grooved**	**Grooved**	**Flanged**	**Grooved**	**Grooved**
H	205	231	235	225	330	295	277	277
R	75	101	115	103	125	138	123	123
La	75*	101	135	120	125	168	152	152
Lb	75*	101	96	92	125	125	125	152
ØC	125	125	181	181	160	245	245	245
Weight (kg)	3.7	4.2	16.5	10.0	9.5	39.0	21.0	22.0

* Allowable tolerance (3 mm as grooved end connections are screwed into the valve body)

OPERATION

Single-Chambered Type

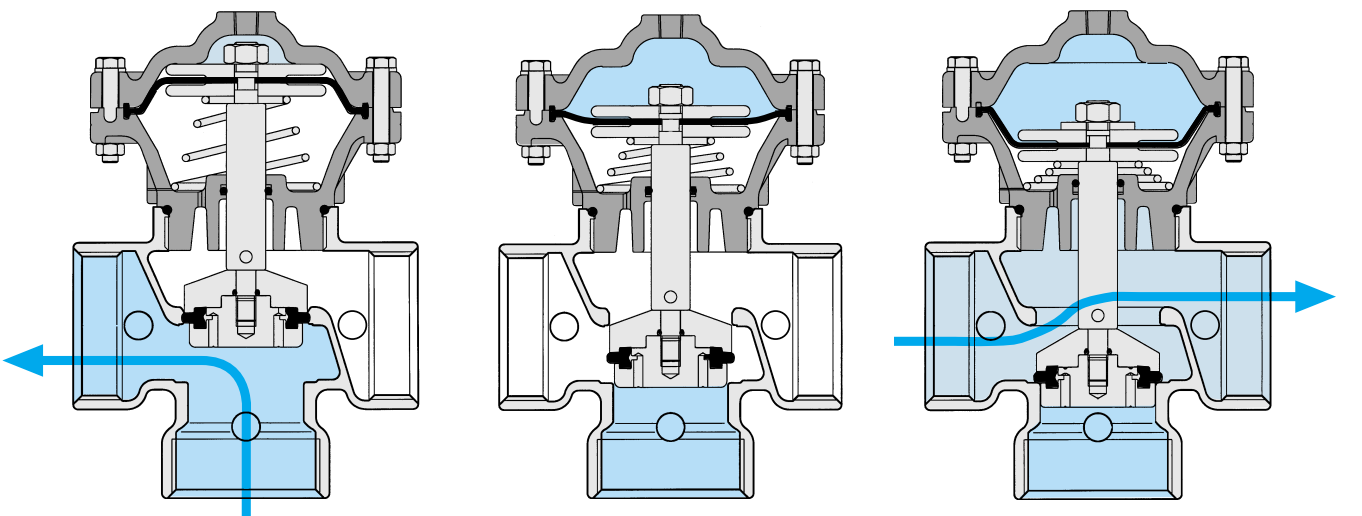


Normal filter flow

Intermediate stage (change of condition). No water exchange between openings

Backwash flow

Double-Chambered Type

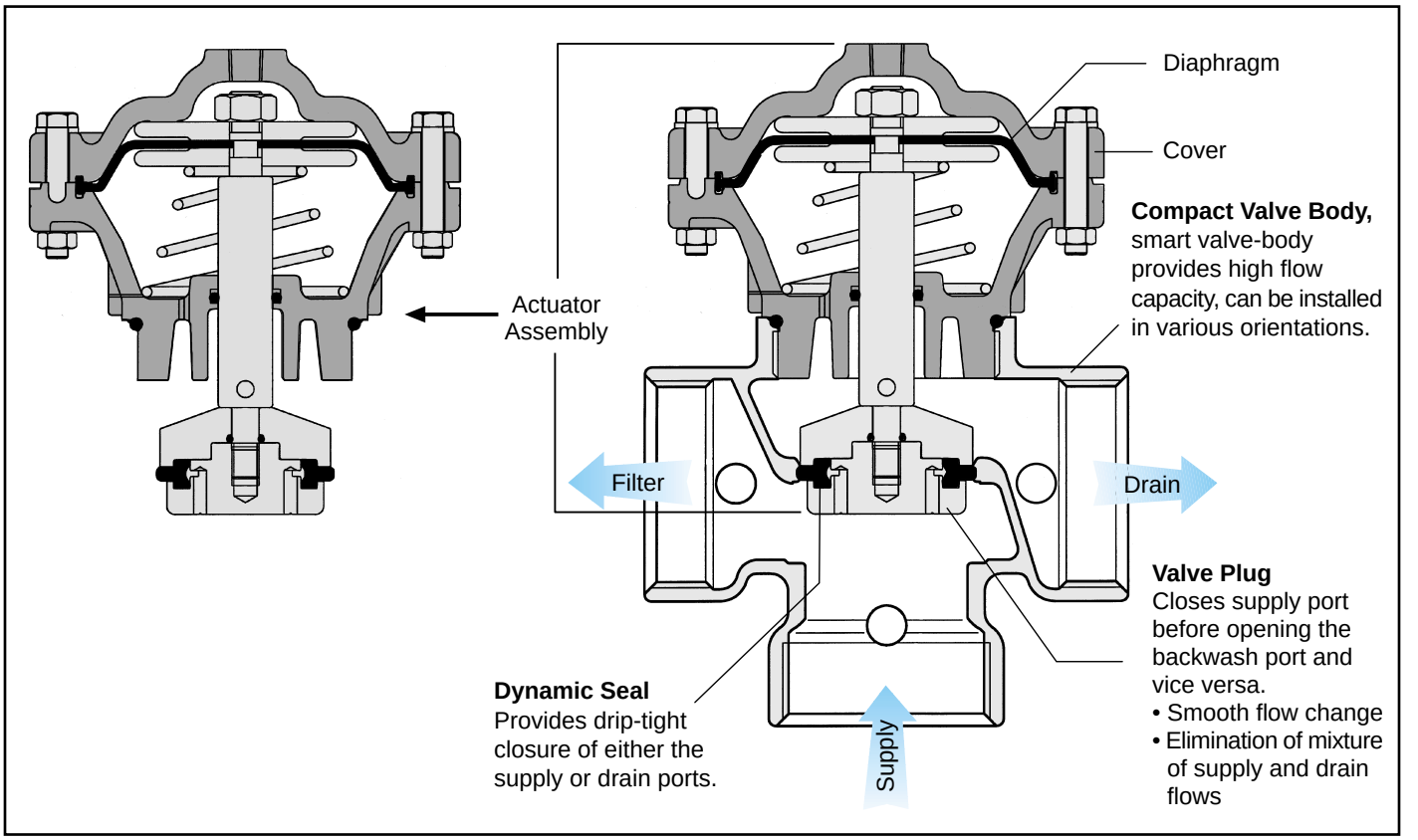


Normal filter flow

Intermediate stage (change of condition). No water exchange between openings

Backwash flow

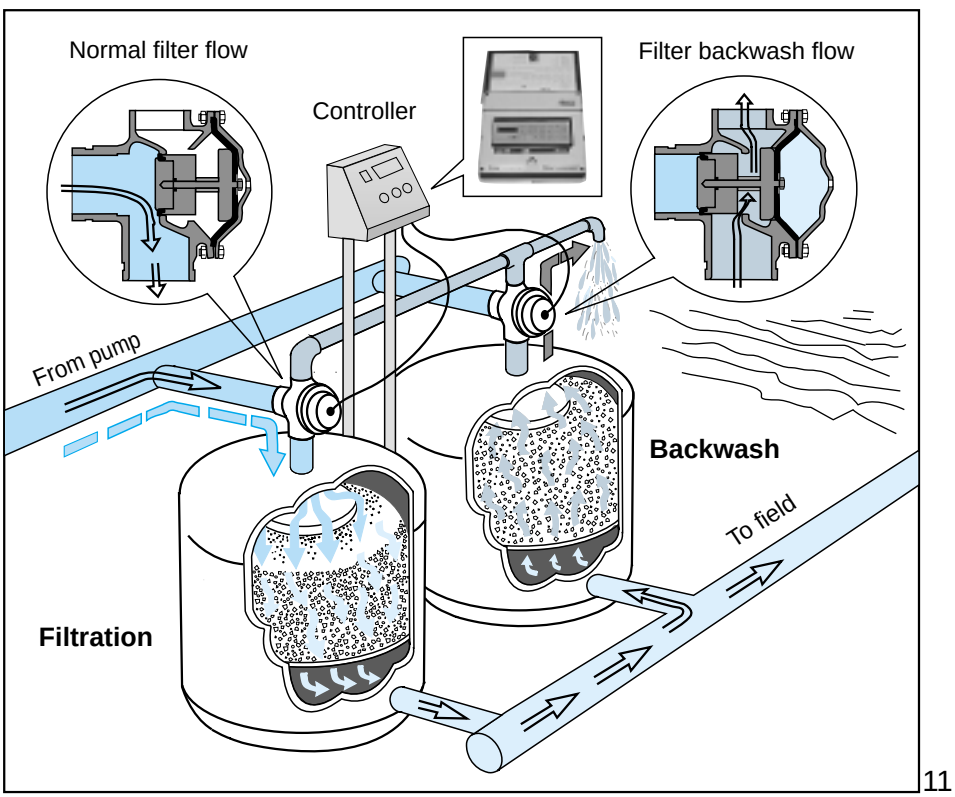
VALVE ASSEMBLY AND FEATURES – Double-Chambered Type, Angle Pattern



OPERATION

The backwash valve can be used in filtration systems which have at least two parallel filters, as the water of one filter is used for backwashing the other. Upon receiving a hydraulic command from the controller, the valve shuts off supply and opens the drain. The filtered water from the other filter(s) flows into the treated filter in order to backwash it.

TYPICAL VALVE OPERATION



400 Series "RAM" – Brass Body

HYDRAULIC DIAPHRAGM CONTROL VALVES

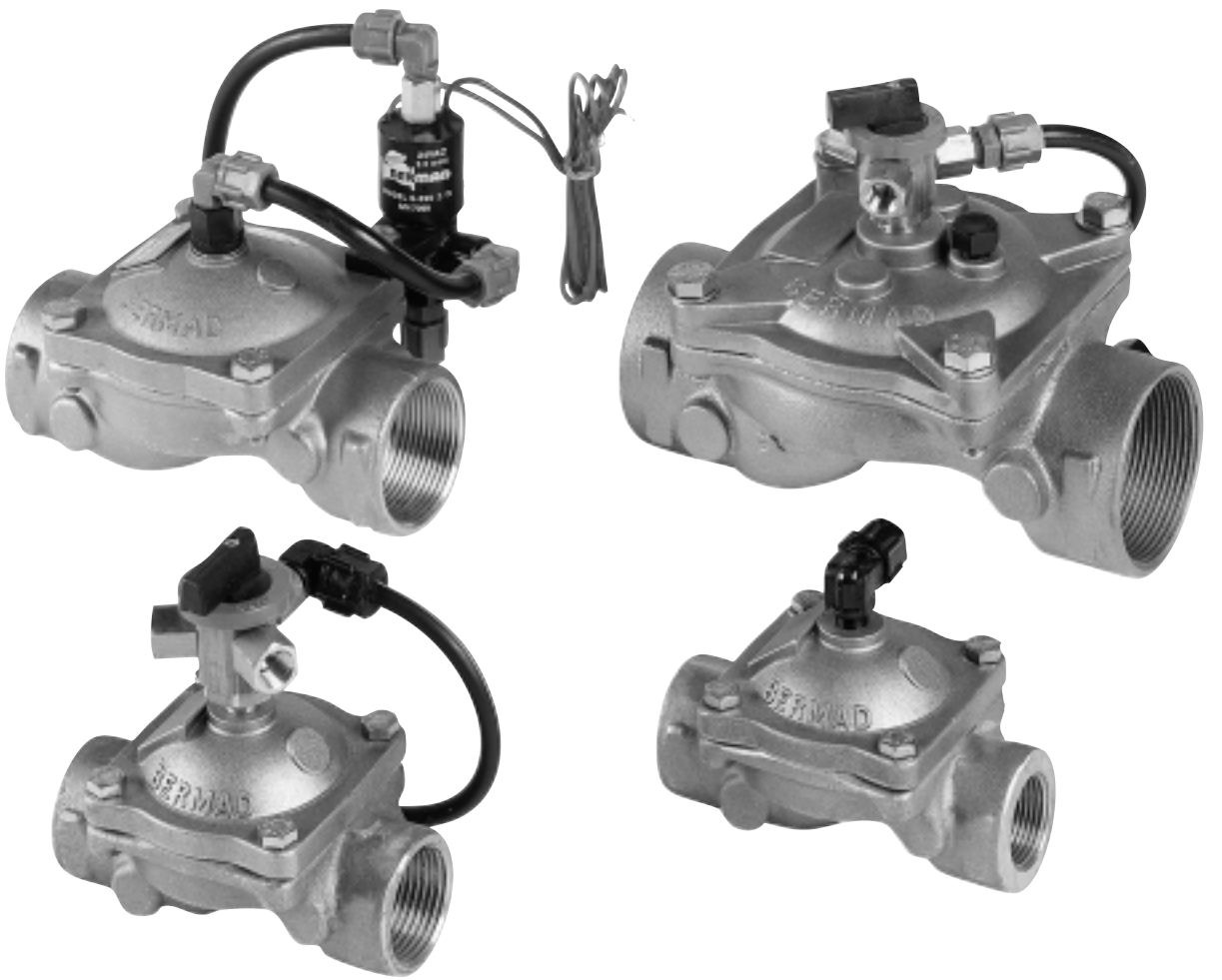
Bermad Control Valve, Model 405
Designed for public gardening and industrial applications.
These brass body valves may be installed in any system for protection against breakage or vandalism.

Bermad Control Valve, Model 405
It is a simple and reliable valve, lightweight and of easy maintenance. Constructed of 4 parts only.

Bermad Control Valve, Model 405
Characterized by its soft opening and closing which prevent pressure surges along the line, even under high differential pressure. The valve is equipped with a special diaphragm (patented) which is supported along its entire circumference.

Bermad Control Valve, Model 405
May be electrically operated by a solenoid mounted directly on the valve, or by a hydraulic command from a remote solenoid manifold.

Most Common Models:
405-Z Hydraulic with a manual selector
410-Z Electrical with a manual selector

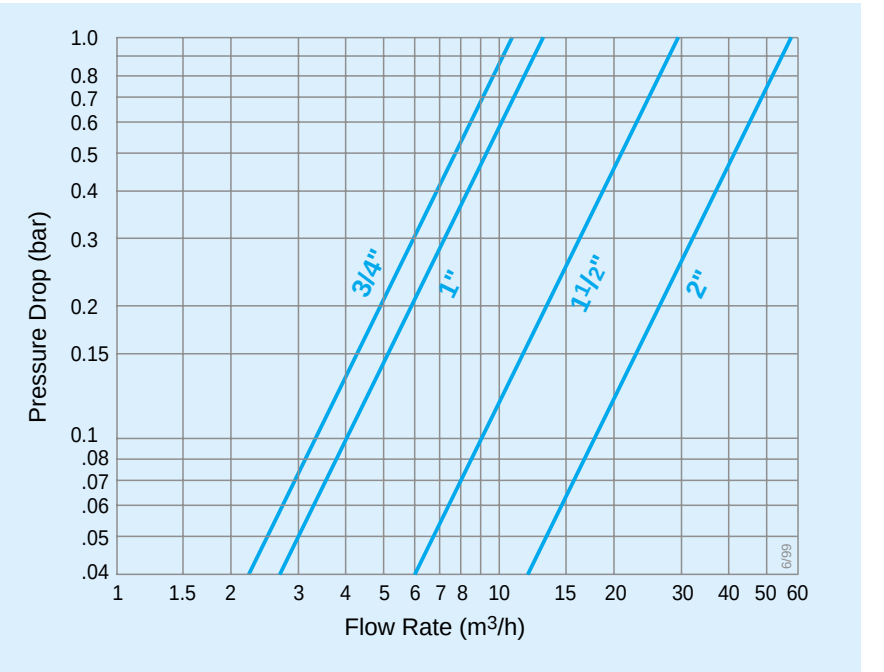


TECHNICAL DATA

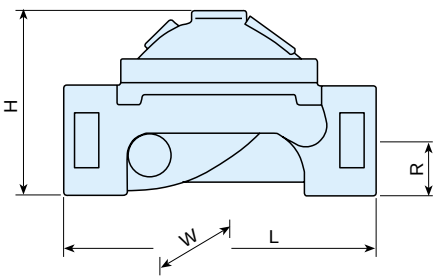
Specifications

- **Valve Pattern:** Globe
- **Sizes:** 3/4", 1", 1 1/2" & 2"
- **End Connections:**
  Threaded Female BSP, NPT
- **Pressure Rating:**
  ISO PN 10
  ANSI: Class 125
- **Operating Pressure Range:**
  0.5-10 bar (7-150 psi)
- **Temperature Range:**
  (water) up to 80°C

Flow Chart

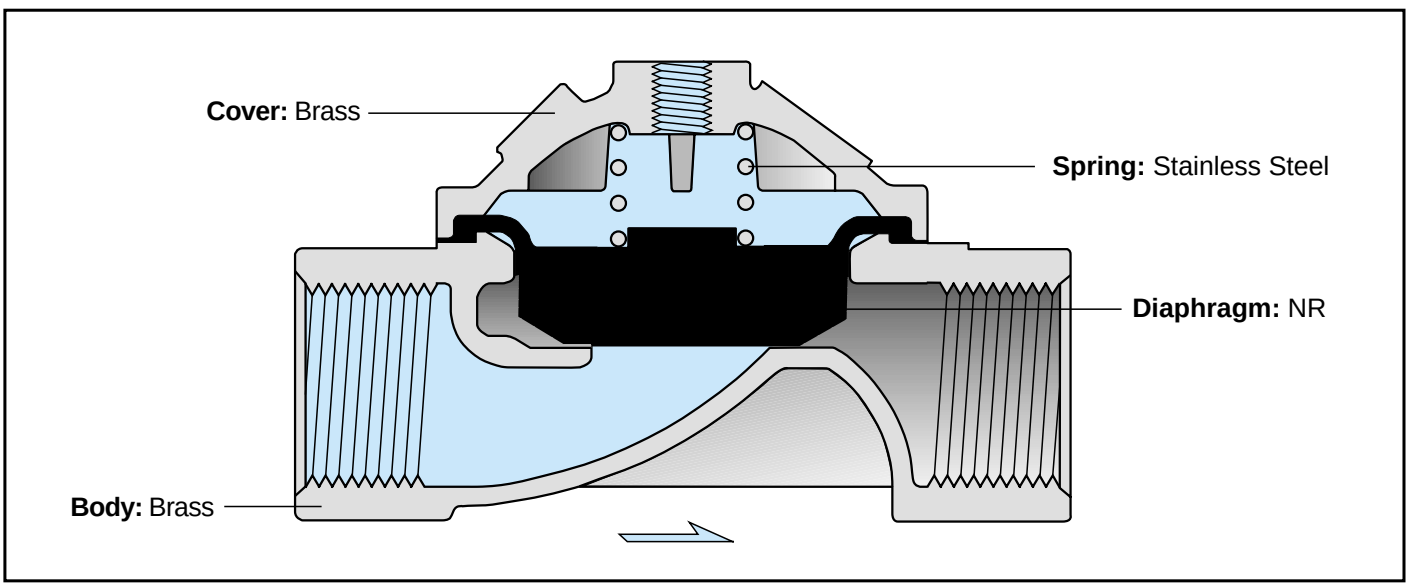


Dimensions and Weights



Size (mm)	**3/4"**	**1"**	**1 1/2"**	**2"**
L	112	112	150	180
H	67.5	67.5	83	110
R	20	20	27.5	38
W	72	72	90	120
Weight (kg)	0.950	0.950	1.5	4.0

VALVE ASSEMBLY AND MATERIALS



400 Series "RAM"

HYDRAULIC DIAPHRAGM CONTROL VALVES

Internationally Patented and Designed Registered

The leading edge in control valve design. Combines simple and reliable construction with superior performance while, at the same time, being virtually free of the typical limitations associated with other single-chambered valves. The valves have been designed for the control of all kinds of irrigation, waterworks and industrial systems.

FEATURES

Diaphragm

- One single type for all service conditions: On/Off and pressure regulating.
- Exceptionally stable action during shutoff and pressure regulation. Absolutely no pressure surges.
- Valve opens with low pressure supply.
- Perfectly balanced diaphragm with no distortion caused by uneven hydraulic forces on shutoff or during regulation.
- No need for special reinforcement nor for different types of diaphragms and springs to meet different operating conditions.

Valve body

- Exceptionally high flow capacity with very low head loss.

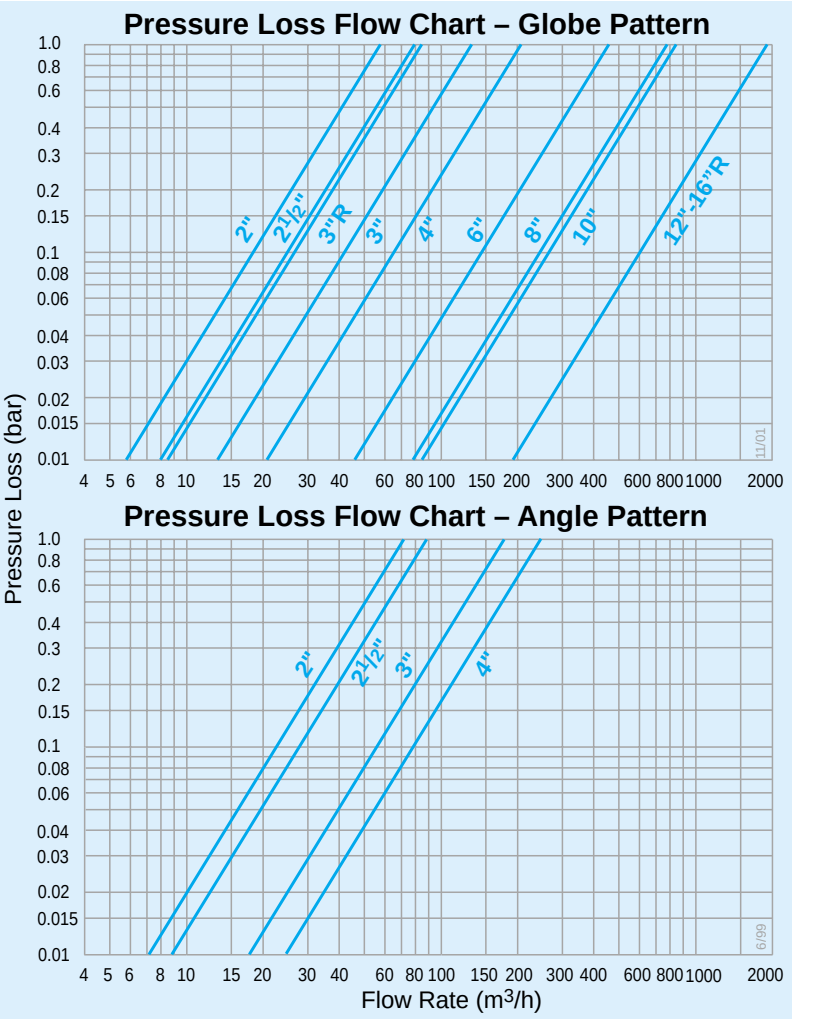
Cover

- Connected to the valve body by 4 bolts only (12”: 8 bolts).
- Enables easy access and easy maintenance.
- Optional: flow control stem or valve position indicator.

TECHNICAL DATA

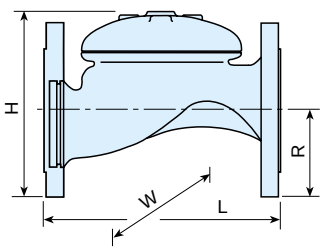
Specifications

- **Valve Pattern:** globe & angle
- **Sizes:**
  Globe: 2", 2½", 3"R, 3", 4", 6", 8", 10", 12" & 16"R
  Angle: 2", 2½", 3" & 4"
- **End Connections:**
  – **Female threaded** BSP, NPT
  Globe - 2", 2½", 3"R & 3"
  Angle - 2", 2½" & 3"
  – **Grooved (Victaulic):**
  Globe - 2", 3", 4" & 6"
  Angle - 3" & 4"
  – **Flanged:** ISO PN 16, ANSI 125, BST-D,
  Globe: 2", 2½", 3"R, 3", 4", 6", 8", 10", 12" & 16"R
  Angle: 2", 3" & 4"
- **Operating Pressure Range:**
  0.5-16 bar (7-230 psi)
- **Temperature Range:**
  Water up to 80°C (180°F)
- **Materials:**
  Body and cover: Cast Iron, Polyester or Epoxy-coated
  Diaphragm: Nylon-fabric, Reinforced Natural Rubber. Options: Nitrile; Buna-N; EPDM
  Diaphragm retainer: Stainless steel
  Spring: Stainless steel
  (Other materials and coatings available on request).



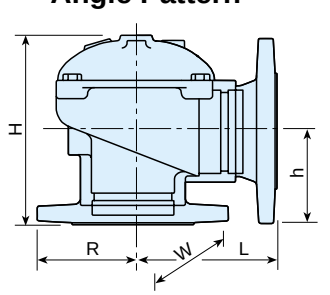
Dimensions and Weights

Globe Pattern



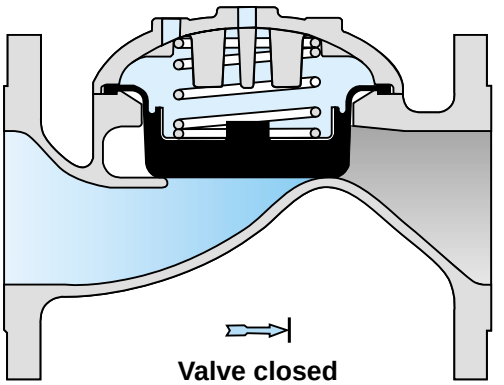
	Threaded				Grooved (Victaulic)				Flanged								
Size (mm)	**2"**	**2½"**	**3R"**	**3"**	**2"**	**3"**	**4"**	**6"**	**2"**	**2½"**	**3R"**	**3"**	**4"**	**6"**	**8"**	**10"**	**12"**	**16"R**
L	180	210	210	255	205	250	320	415	205	205	210	250	320	415	500	605	724	742
H	111	133	140	160	106	156	190	404	155	178	187	210	242	345	430	460	635	695
Hf*	205	226	228	260	200	255	300	609	245	260	270	310	328	550	660	690	930	976
W	120	129	129	175	120	175	200	306	155	178	200	200	223	306	365	405	580	600
R	38	46	55	55	32	46	60	85	78	89	100	100	112	140	170	202	240	300
Weight (kg)	4	5.7	5.8	13	5	10.6	16.2	49	9	10.5	12.1	19	28	68	125	140	290	377

Angle Pattern

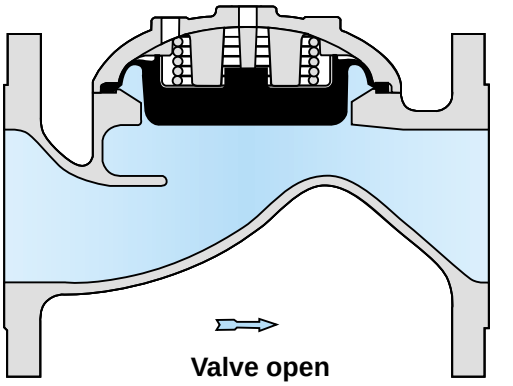


	Threaded			Grooved (Victaulic)		Flanged		
Size (mm)	**2"**	**2½"**	**3"**	**3"**	**4"**	**2"**	**3"**	**4"**
L	70	110	110	120	160	121	153	160
H	119	182	184	194	223	157	200	223
Hf*	211	275	336	346	309	249	278	309
W	118	131	170	170	204	155	200	223
h	61	93	80	90	112	83	101	112
R	38	65	55	45	58	78	100	112
Weight (kg)	4.4	5.8	11	10	16	9	17	26

*Hf = height with optional flow stem (at open position)



Valve closed



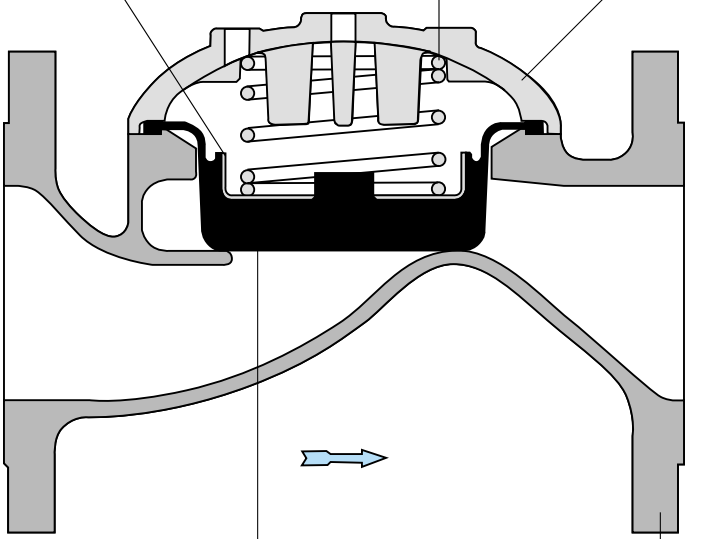
Valve open

VALVE ASSEMBLY

Diaphragm retainer
For perfect guidance.

Spring
One single type for all service conditions.

Cover
- Only 4 bolts (12": 8 bolts).
- Easy top access for maintenance.



Diaphragm
- On single type for all conditions: "On-Off" and pressure regulation.
- Progressive dynamic guidance, resulting in exceptionally stable action.
- No pressure surges. No chattering.

Valve body
(Registered design application).
Outstanding flow capacity.

Pilot Valves and Control Accessories:
refer to PC series, page 38

R Series "RAM HYDRANT"

3" HYDRAULIC CONTROL VALVES

For agriculture, turf and filtration control systems

The **BERMAD R Series 3" RAM HYDRANT** control valves are hydraulically-operated diaphragm valves, designed for reliable control of irrigation hydrants and characterized by simplicity, durability and dependability. The RAM HYDRANT valves come in three configurations: angle, tee or dual actuator tee patterns.

FEATURES

- Exceptionally high flow capacity, with very low head loss.
- Smooth operation, without causing pressure surges.
- Can operate under the most adverse environmental conditions, with practically no maintenance required.
- Simple, sturdy construction. Only one moving part, no seals.
- Multi-directional flow.

Dual Actuator Tee

Angle

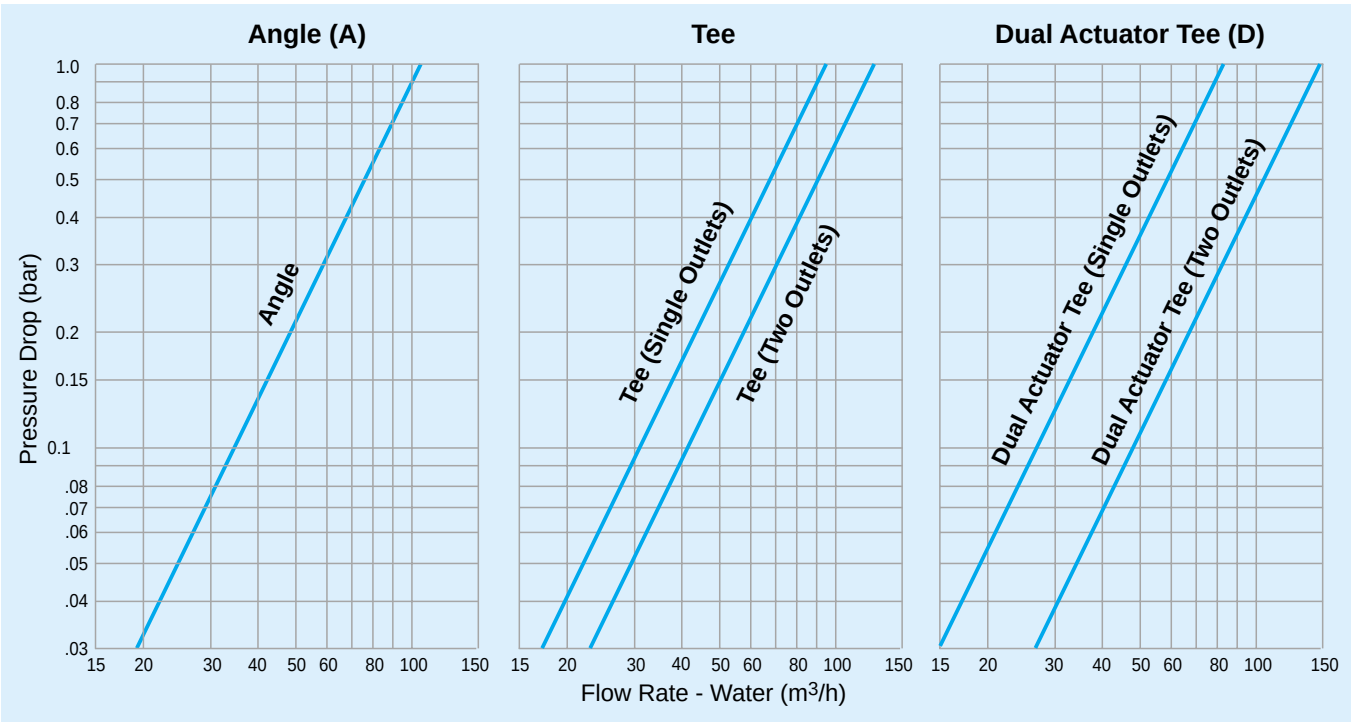
Tee

TECHNICAL DATA

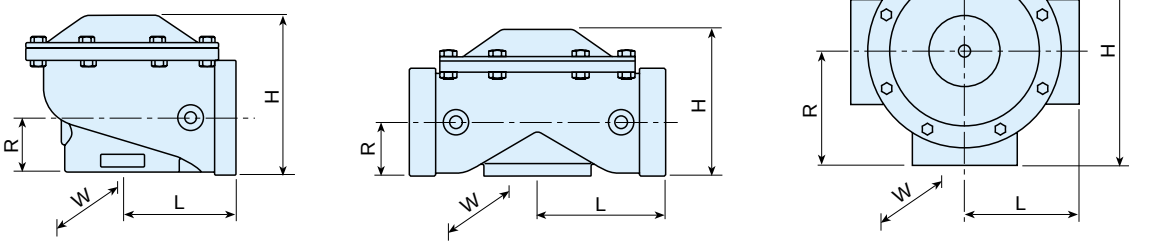
Specifications

- **Valve Pattern:**
  Angle, tee, & dual actuator tee
- **Sizes:** 3"
- **Connections:**
  – **Standard:** female threaded BSP, NPT
  – **Optional:** "quick" coupling with rubber ring joint ("horn" latch)
- **Pressure Rating:**
  ISO: PN 10
  ANSI: Class 125
- **Operating Pressure Range:**
  0.7-10 bar (10-150 psi)
- **Temperature Range:**
  Water up to 80° C (180°F)
- **Materials:**
  Body: Cast Iron or aluminum alloy super hard anodizied (MIL- A8625 Type III) and polyester-coated
  Cover: polyester-coated steel
  Diaphragm: Nylon-fabric, Reinforced Natural Rubber

Flow Chart



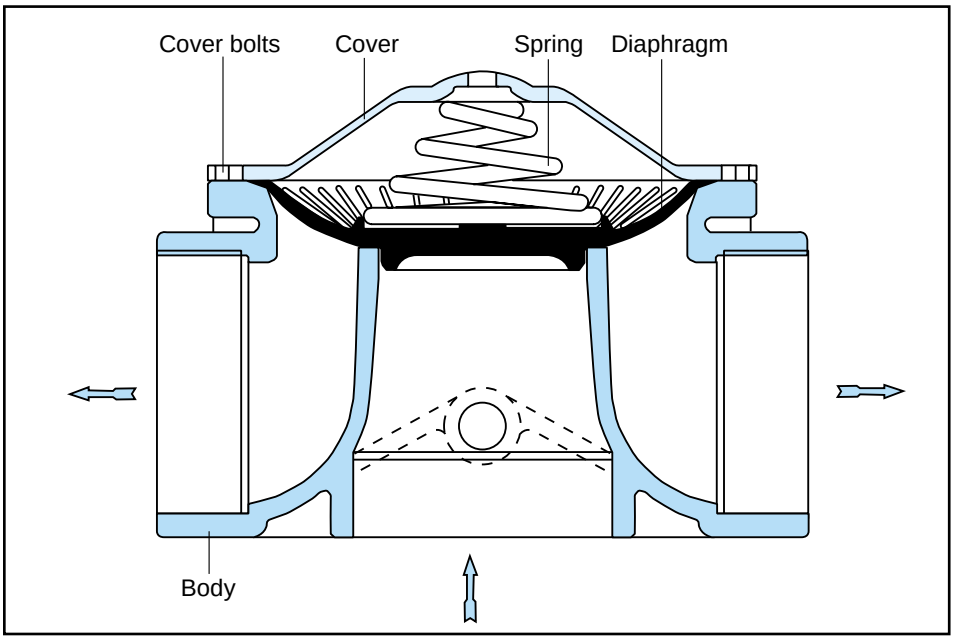
Dimensions and Weights



Valve Pattern	Angle (A)		Tee		Dual Actuator Tee (D)
Size (mm)	**Aluminum**	**Iron**	**Aluminum**	**Iron**	**Aluminum**
L(*)	107*	107	107	107	111
W	183	183	183	183	200
H	148	151	148	151	190
R	50	53	50	53	100
Weight (kg) (*)	3.0	6.0	3.2	7.2	5.7

* For models with "quick" couplings, add 35 mm to length and approx. 25% to weight.

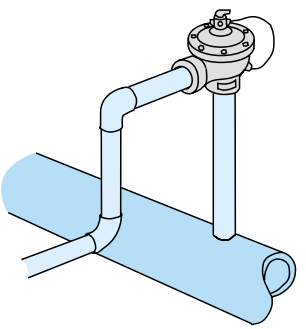
VALVE ASSEMBLY



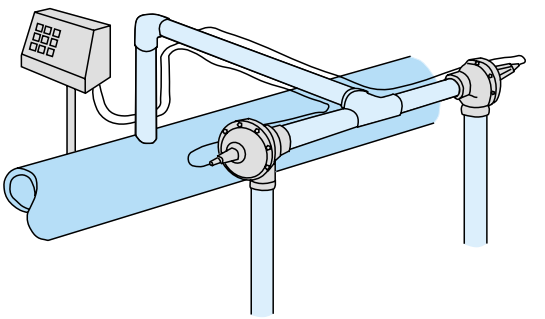
Pilot Valves and Control Accessories:
Refer to PC Series, page 38

TYPICAL APPLICATIONS

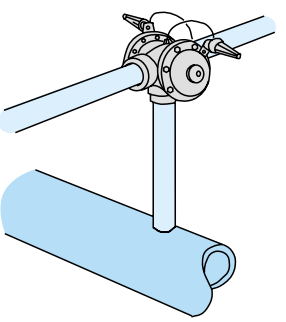
Model R05
Hydraulic Control Valve
Angle-pattern hydrant.
For automatic hydraulic remote controlled hydrant.



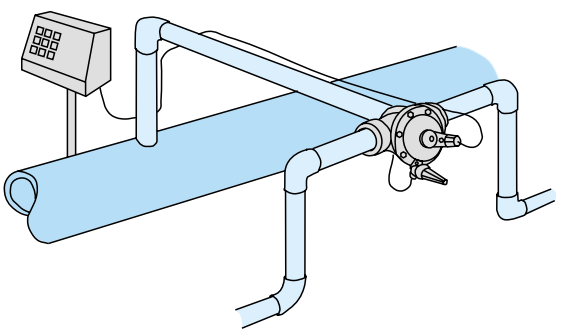
Model R10
Electric Control Valves
Two-direction hydrant.
For automatic electric remote controlled systems (two distinct directions).



Model R20
Pressure Reducing Valve
Dual actuator Tee-pattern hydrant, manually operated but with independent pressure reducing on each side.
"Quick" coupling for aluminum portable pipes.



Model R20-55
Pressure Reducing Valve with Electric Control
Tee-pattern Hydrant.



900 Series – Hydrometers

W – MECHANICAL DRIVE HYDROMETERS

WM – MAGNETIC DRIVE HYDROMETERS

D – AUTOMATIC METERING VALVES (AMV)

For irrigation, waterworks and industrial systems

This exclusive, patented valve combines a turbine-type water meter and a diaphragm-actuated control valve in one single valve body.

The **HYDROMETER (W)** is available in a variety of different models for a multitude of applications. The turbine-type water meter measures flow with an accuracy of ±2%, while the built-in control valve performs, simultaneously, On/Off or pressure/flow regulating duties.

The **AUTOMATIC METERING VALVE (AMV)** is an upgraded version of the Hydrometer. It automatically shuts off after delivering a preset quantity (volume) of water. Such valves can be employed in sequential operation of irrigation blocks through hydraulic remote control tubes.

FEATURES

- The valve is line pressure driven and does not depend on any external source of energy.
- Internal flow straighteners provide accurate flow measurement, with no need for straight pipe allowances before and after the valve.
- Optional: electric remote readout for the operation of computer-controlled systems.
- Future upgrading: the HYDROMETER's versatility provides the option of simple and easy upgrading of the control head and the hydraulic valve to a computerized irrigation system.
- Major agricultural application: can be incorporated in an irrigation hydrant (see picture on this page).

TECHNICAL DATA

Specifications

Valve Pattern: globe & angle

Sizes: 1 1/2", 2", 3"R, 3", 4", 6" & 8"

End Connections:
– 1 1/2", 2" & 3"R: female threaded BSP, NPT
– 3"R, 3", 4", 6" & 8": flanged ISO PN 16; BST-D; ANSI #125, JIS 10

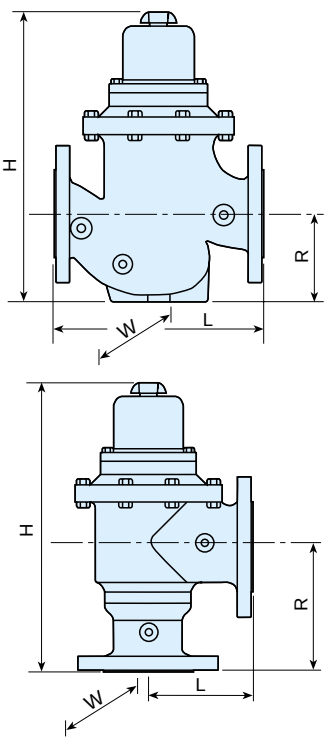
Operating Pressure Range:
0.7-10/16 bar (10-150/225 psi)

Temperature Range:
Water up to 50°C (120°F)

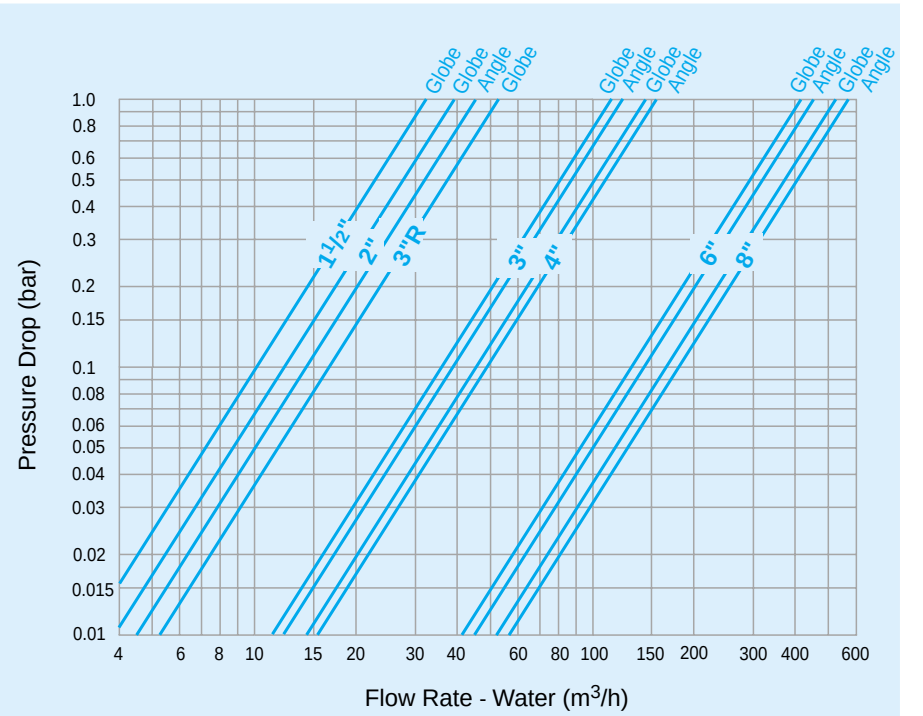
Accuracy:
– Complies with, and exceeds, ISO 4064 Class A metrological requirements, Flow metering valves Type I, dosing accuracy ±2% of dial capacity, or better

Materials:
Body and cover: Cast Iron
Mechanism: Plastic, Stainless Steel, Brass
Diaphragm: Reinforced Natural Rubber
Seals: Buna-N and NR

Dimensions and Weights



Flow Chart



	1 1/2"	2"	3"R	3"	4"	6"	8"
Qmax - Peak flow, short time (m^3/h)	30	35	50	130	180	350	550
Qn - Continuous flow (m^3/h)	15	25	30	65	110	215	350
Qt - Transition flow (m^3/h) ± 2% accuracy	3	3	3	8	12	30	50
Qmin - Min. flow (m^3/h) ± 5% accuracy	1.2	1.2	1.5	3.2	4.8	4.5	7.5
Min. flow rate (m^3/h) for safe valve closure	1.5	2.0	2.0	3.2	4.8	10.0	12.0

Globe Pattern

Size (mm)	*1 1/2"	*2"	*3"R	3"	4"	6"	8"
L	210	225	250	290	360	550	600
W	135	137	138	210	250	380	380
H	293	300	300	405	470	625	640
R	103	95	90	125	137	215	220
Weight (kg)	5.5	7	8	24	44	105	125

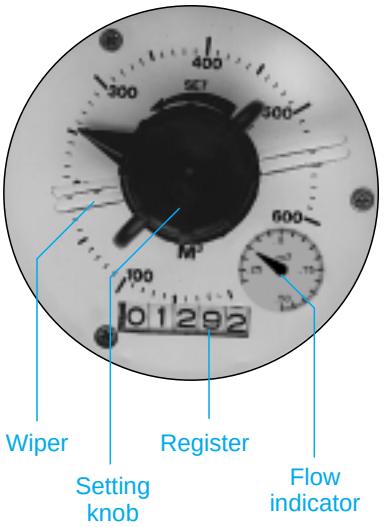
Angle Pattern

Size (mm)	*2"	*3"	4"	6"	8"
L	125	150	185	250	250
W	137	210	250	380	380
H	320	427	460	610	620
R	125	197	225	306	280
Weight (kg)	9	18	35	80	90

* 1 1/2", 2" & 3"R threaded

HYDROMETERS AND AUTOMATIC METERING VALVES (MECHANICAL DRIVE)

Automatic Metering Valve (D)

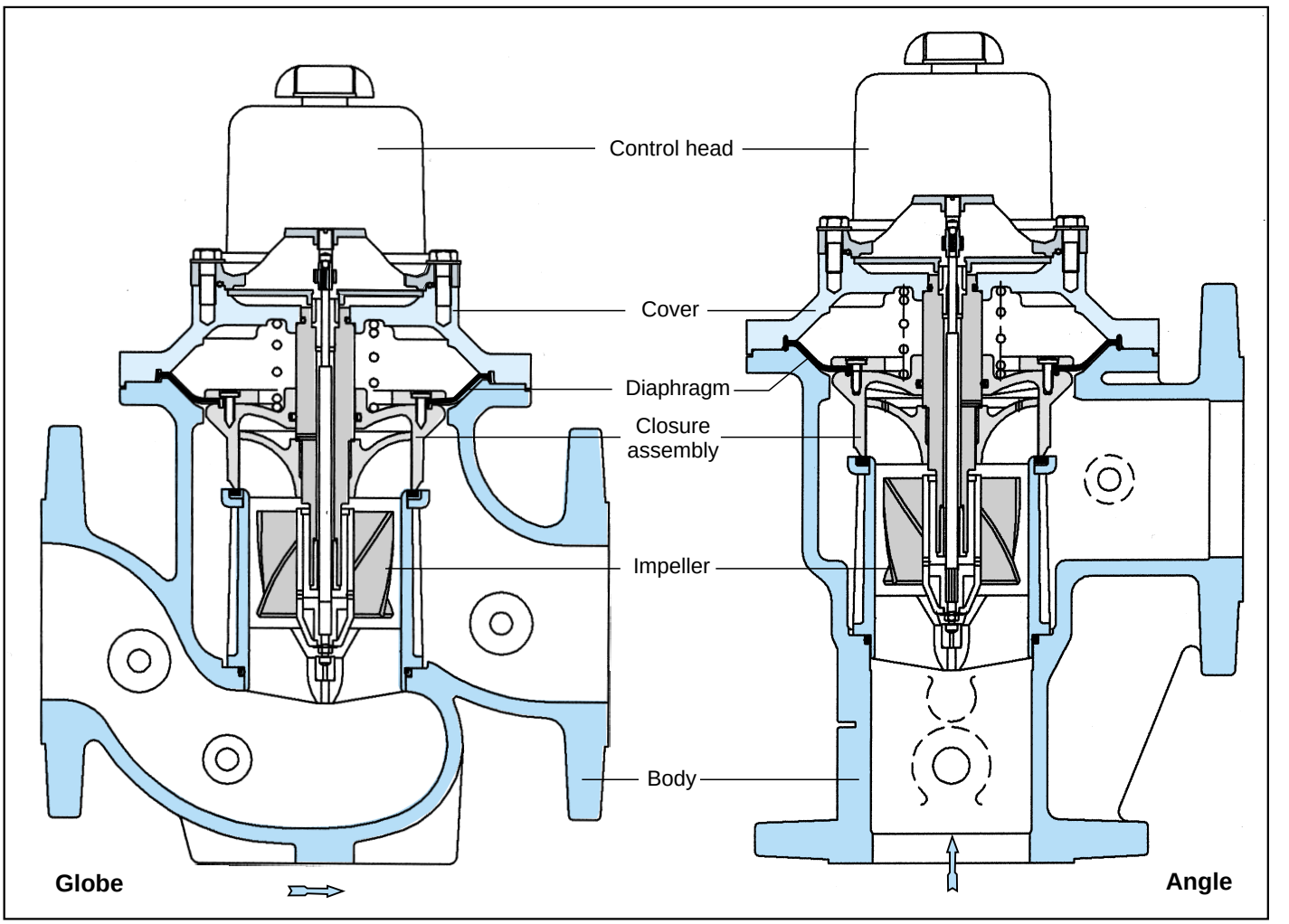


AMV Dial Capacity Selection

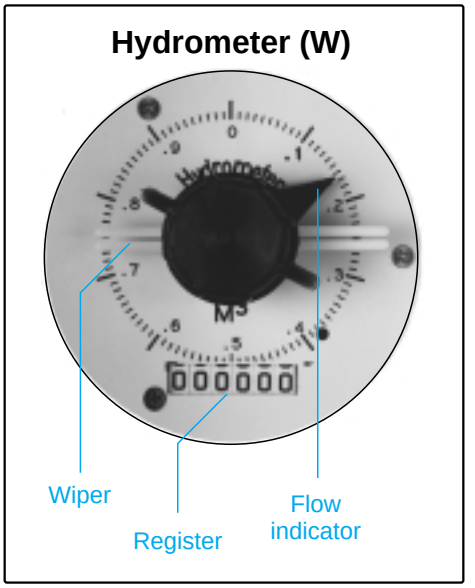
	Dial Capacity m^3	Scale Graduation m^3	
	4	0.1	1½" - 2" - 3" - 3"R
	12	0.2	
	40	1	
	80	1	
4" - 6" - 8"	120	2	
	150	2	
	200	5	
	350	10	
	600	10	
	800	10	
	1200	20	
	2100	50	
	3500	100	
	6000	100	
	8000	100	
	12000	200	

	Dial Capacity US Gal.	Scale Graduation US Gal.	
	13,000	100	1½" - 2" - 3" - 3"R
	50,000	1,000	
	130,000	2,500	
	200,000	5,000	
4" - 6" - 8"	500,000	10,000	
	870,000	20,000	
	1,300,000	25,000	
	2,000,000	25,000	

HYDROMETER - BASIC VALVE ASSEMBLY



HYDROMETERS AND AUTOMATIC METERING VALVES (MECHANICAL DRIVE)



Pulse Transmitter

- For electric remote readout
- For computer-controlled system operation

- **Electrical data:**

- Switching voltage: 48V AC/DC max
- Switching current: 0.2Amp. max
- Switching power: 4W max

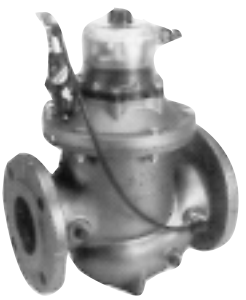
Hydrometer Pulse Rate

Size / One pulse per	1 1/2", 2" 3"R	3"& 4"	6" & 8"
10 L	●	●	
100 L	●	●	●
1 m^3	●	●	●
10 m^3		●	●
10 US gal.	●	●	
100 US gal.	●	●	●
1,000 US gal.	●	●	●
10,000 US gal.		●	●

Automatic Metering Valve Pulse Rate

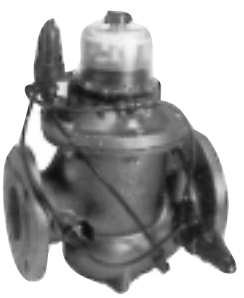
Size / One pulse per	1 1/2", 2" 3"R & 3"	4"	6" & 8"
1 m^3	●	●	
10 m^3		●	●
100 US gal.	●		
1000 US gal.		●	●

SELECTED MODELS



Model 910-P
Electric Control and Pulse Transmitter Hydrometer
Model 910-P has a 3-way solenoid pilot valve with manual override and an electric remote readout pulse transmitter which feedback a computer controlled system or an electric switch board of a pumping system.

Model 920-55
Pressure Reducing and Electric Control Hydrometer
Model 920-55 combines a pressure reducing Hydrometer, which reduces high upstream pressure to a lower set downstream pressure, with an electric remote control solenoid.



Model 927
Flow Rate Control and Pressure Reducing Hydrometer
Model 927 maintains a preset downstream pressure and limits the rate-of-flow to a preset value, regardless of changes in system pressure or demand.

900WM – MAGNETIC DRIVE HYDROMETER

The Model 900WM integrates a Woltman-type vertical turbine water meter and a basic diaphragm-actuated control valve. The vertical turbine impeller drive is magnetically coupled to the vacuum-sealed meter register in the control head. Both the magnetic-drive control head and its register are sealed (completely dry) and are not affected by dirty water conditions. The highly sensitive magnetic-drive provides superior accuracy that exceeds all water meter standards. The available control head options provide increased data as well as greater flexibility in electrical pulse generation/ transmissions.

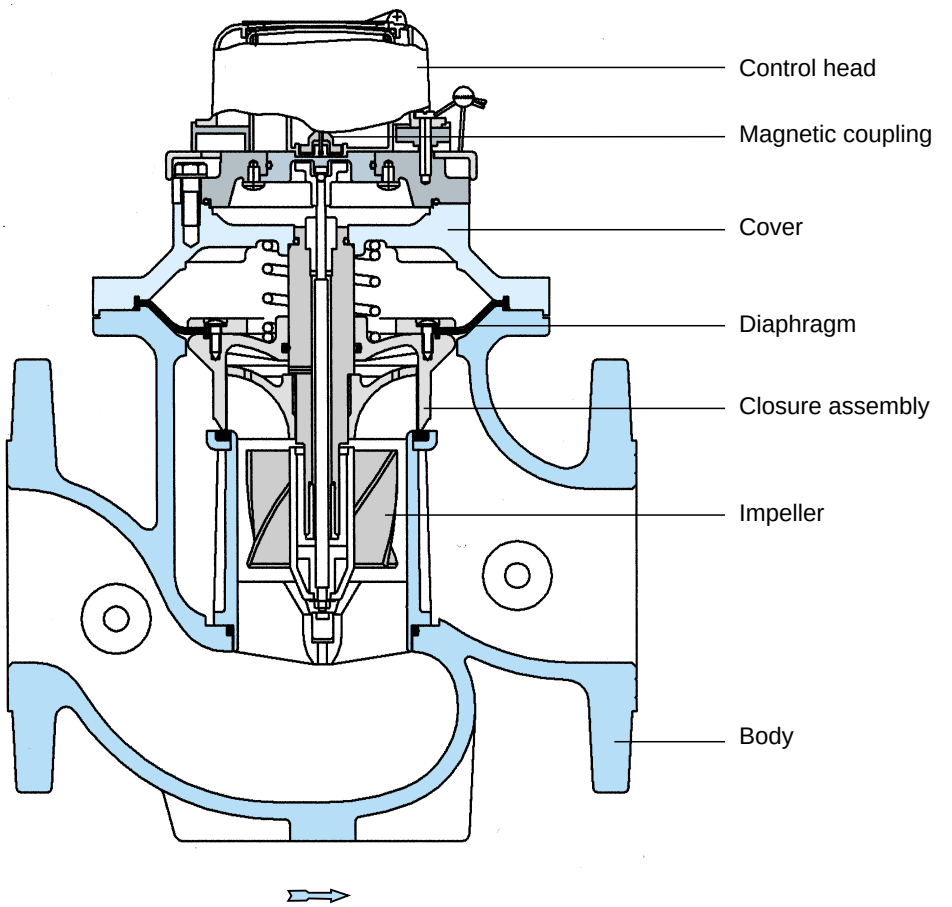
FEATURES

- Two models for pulse generating: reed-switch and photoelectric sensor
- Vacuum-sealed register and fully-shielded control head ensure clear visual readout and water-free gear train mechanism.
- The dial display includes rotating “Star” as an aid leak detection.

TYPICAL APPLICATIONS

- Computerized irrigation systems
- Municipal and industrial water supply
- Remote flow data read-out
- Flow monitoring and leakage control
- Water metering

HYDROMETER (MAGNETIC DRIVE) - BASIC VALVE ASSEMBLY



900WM – MAGNETIC DRIVE HYDROMETER

Pulse Generating Options

- The reed-switch pulse transmitter is a magnetic on/off switch that produces an electric pulse per unit of volume.
- An obvious choice for high flow conditions, the highly accurate, infrared retro-reflective photocell (opto) pulse transmitter produces a very low electric current (mA) and has unlimited pulse rate capacity, the electric current is transmitted to a converter that enables flow rate readout or pulse counting.

Electric Pulse Generating Options

Each hydrometer is capable of generating 2 simultaneous outputs.
The hydrometer can be factory configured as standard or optional.
This table shows the possible combinations.

		Opto-switch		Reed-switch			
		1 Liter	10 Liter	10 Liter	100 Liter	1m³ Liter	10m³ Liter
	DN		1 US Gal.	1 US Gal.	10 US Gal.	100 US Gal.	1000 US Gal.
Standard	40, 50, 65, 80	O		O	O		
	100	O			O	O	
	150, 200		O			O	O
Optional	40, 50, 65, 80	X			X	X	
	100	X		X	X		
	150, 200		X		X	X	

Reed-switch Electric Data

- Switching voltage: 48V AC/DC max
- Switching current: 0.24 max
- Switching power: 4W max

Opto-switch Electric Data

- Supply voltage: 8.2V DC
- Reflection current: <1.2 mA
- No reflection current: >2.1 mA

MAGNETIC DIAL DISPLAYS

For DN 40-100 mm Dial

For DN 150-200 mm Dial

MT Series

"BERMADON" – AUTOMATIC SHUT-OFF WATER METERING VALVES

For use in small-scale automatic irrigation and refilling of small tanks

The "***BERMADON"*** automatically delivers a preset quantity of water, after which it shuts itself off.
This original design saves water by actually metering flow rather than timing it.

FEATURES

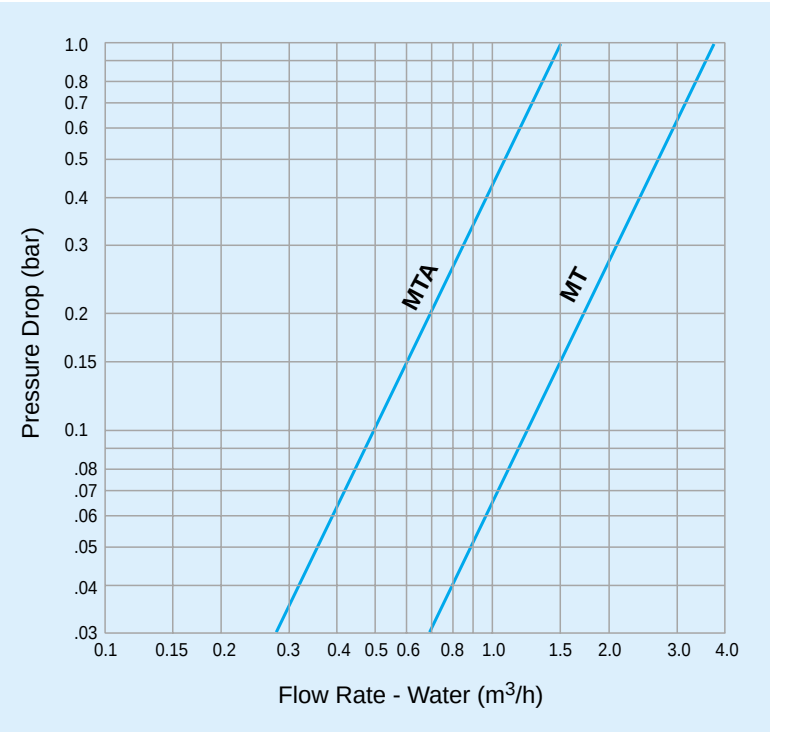
- No electricity required.
- Simple design and high quality materials.
- Minimum maintenance.
- Extreme accuracy and dependability.
- Easy installation and operation.
- Metered water delivery during irrigation cycle is unaffected by pressure fluctuations.
- Can be installed in any position.

TECHNICAL DATA

Specifications

- **Sizes:** 3/4" & 1"
- **Connections:** male threading, BSP, NPT
- **Pressure Rating:**
  ISO: PN 10
  ANSI: Class 125
- **Operating Pressure Range:**
  0.7-6 bar (10-90 psi)
- **Valve Category:**
  MT - Normal flow
  MTA - Low flow
- **Temperature Range:**
  water up to 80°C (180°F)
- **Accuracy of dosing:** 2% of the max scale value plus 4% of the set volume.
  (Meets requirement of ISO 7714 Class 3)
- **Materials:**
  Base, housing and gears: Plastic
  Shafts and springs: Stainless Steel
  Seals: EPDM and NBR

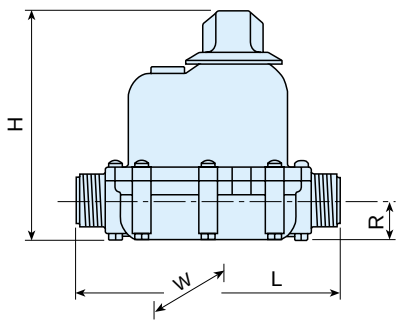
Flow Chart



Flow Rate and Dial Capacity

Valve Category	Size		Nominal Flow Rate (m^3/h)	Flow Rate (m^3/h)		Dial Capacity	Graduation (liters)
	3/4"	1"		Min	Max		
MT	•	•	3.0	0.5	5.0	100 Liter 1000 Liter 2000 Liter 4 - m^3 10 - m^3 20 - m^3 50 - m^3	2.5 25 50 100 250 500 1000
MTA	•	•	1.5	0.1	2.0	50 Liter 500 Liter 2000 Liter 4 - m^3 8 - m^3	1 10 50 100 200

Dimensions and Weights



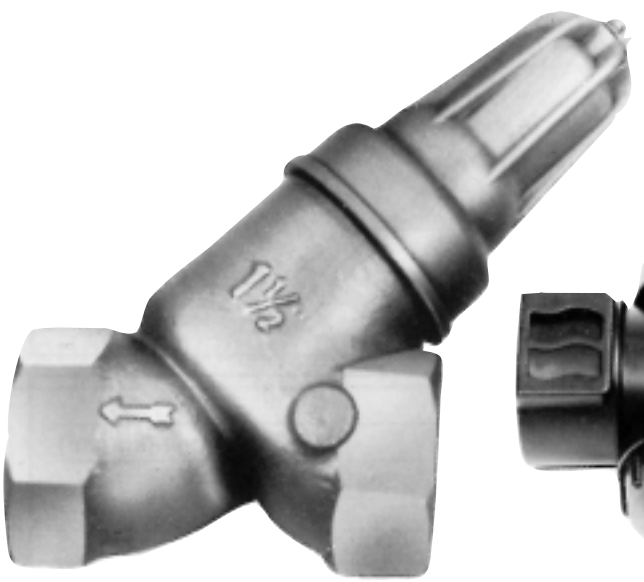
Size (mm)	3/4"	1"
L	166	166
H	145	145
W	100	100
R	25	25
Weight (kg)	0.60	0.65

PRV Series
DIRECT ACTING PRESSURE REDUCING VALVES
For irrigation

The **BERMAD PRV Series** Direct Acting Pressure Reducing Valves have been specially designed for use where accurate and reliable control of line pressure is required, regardless of fluctuations in supply pressure and/or flow rate.

FEATURES

- The use of a rolling diaphragm provides:
  – Complete separation of the mechanism from the flow, resulting in long, trouble-free service.
  – Minimum friction resistance to mechanism movement, resulting in accurate performance.
- PRV regulators are available with a wide range of spring selection, for downstream pressure setting.
- PRV regulators are available in two models: adjustable and fixed downstream preset pressure.
- PRV regulators are also available in drip-tight models for static pressure conditions.



1 1/2”

1”

3/4”

Model 0075-PRV

Specifications

Sizes: 3/4"

End Connections:
Female or male-female threading
BSP, NPT

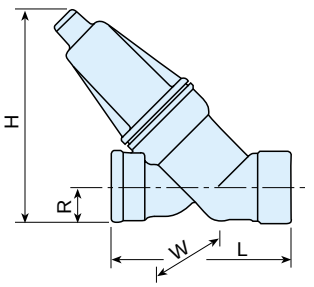
Flow Capacity Range:
Standard model: 0.2-5.0 m^3/h
High & low flow model: 0.01-5.0 m^3/h

Pressure Rating:
Minimum working pressure
0.7 bar (10 psi)
maximum working pressure
9 bar (130 psi)

Temperature Range:
Water up to 80°C (180°F)

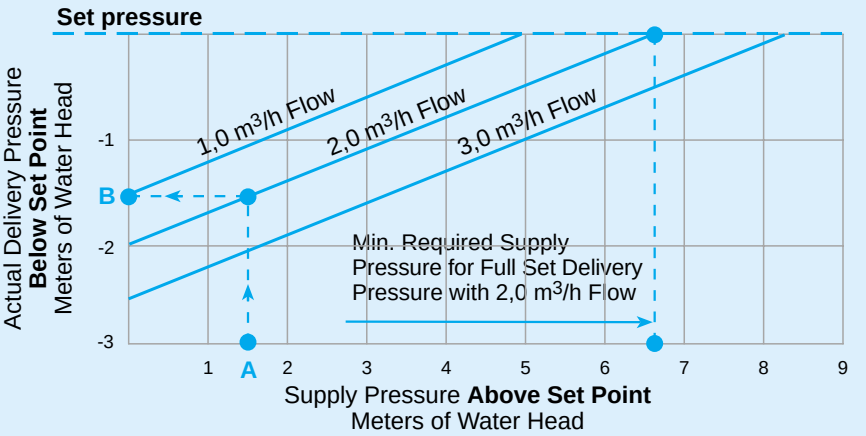
Materials:
Body: Plastic
Seals: Buna-N and NR
Diaphragm: Nylon-fabric,
Reinforced Buna-N
Spring: Stainless steel

Dimensions and Weight



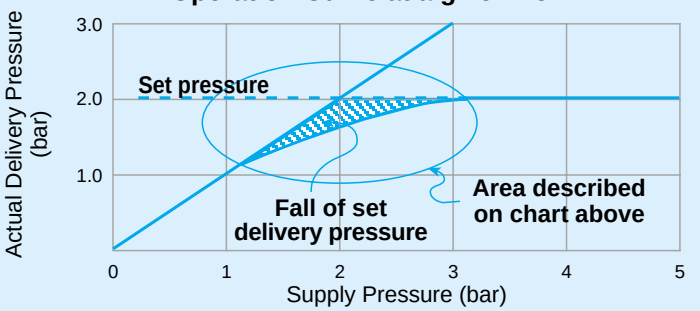
Size (mm)	**3/4"**
L	166
H	145
W	100
R	25
Weight (kg)	0.60

Fall off Set Delivery Pressure on Short Supply Pressure at Different Flows

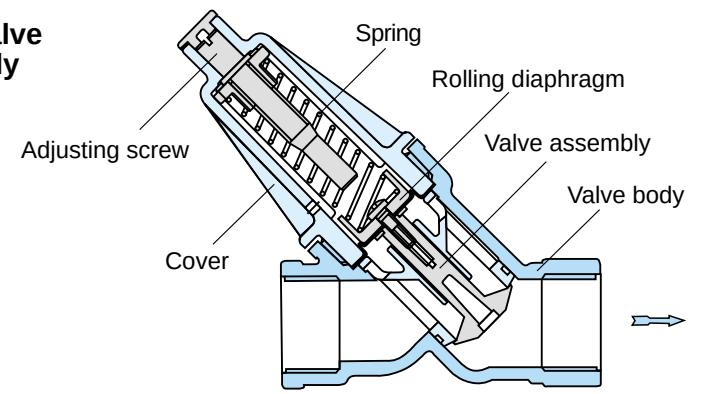


Example: (see **A** to **B**)
Set point of delivery pressure = 20 m
Flow rate = 2,0 m^3/h
A If supply pressure is only 21,5 m **(1,5 m only above set point)**
B Then actual delivery pressure will fall to 18,5 m **(1,5 m below set point)**

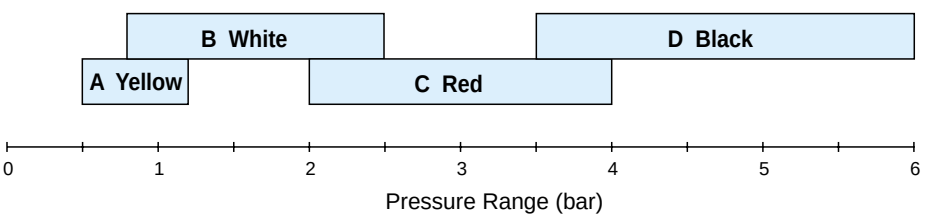
PRV Operation Curve at a given flow



Basic Valve Assembly



Spring Selection Diagram



Spring	Pressure Range (bar) Min	Max
A	0.5	1.2
B	0.8	2.5
C	2.0	4.0
D	3.5	6.0

Model 100-PRV

Specifications

Sizes: 1"

End Connections: BSP, NPT
1" size female-female threading

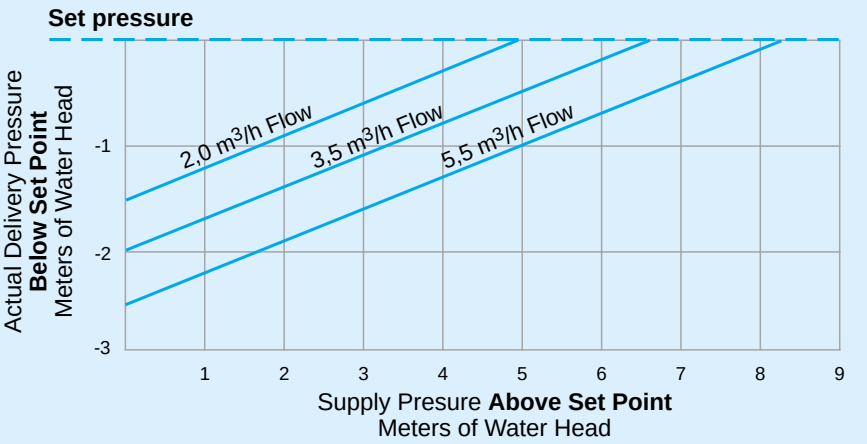
Flow Capacity Range:
0.45-8.0 m^3/h

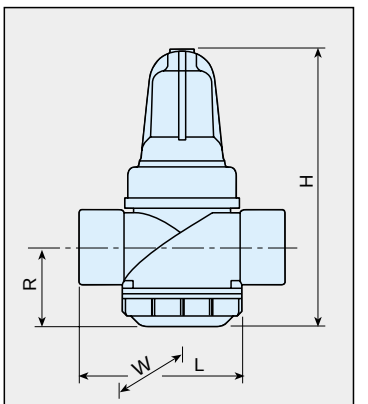
Pressure Rating:
Minimum working pressure
0.7 bar (10 psi)
maximum working pressure
9 bar (130 psi)

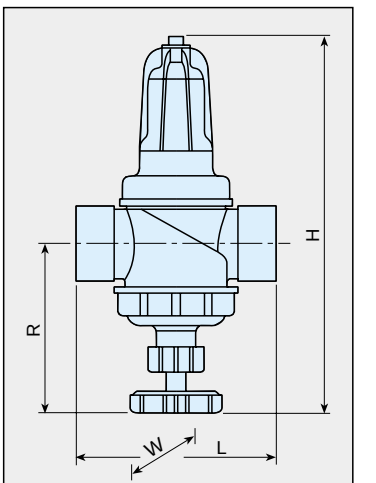
Temperature Range:
Water up to 80°C (180°F)

Materials:
Body: Plastic
Seals: Buna-N and NR
Diaphragm: Nylon-fabric,
reinforced Buna-N
Spring and shafts: Stainless steel

Fall off Set Delivery Pressure
on Short Supply Pressure at Different Flows





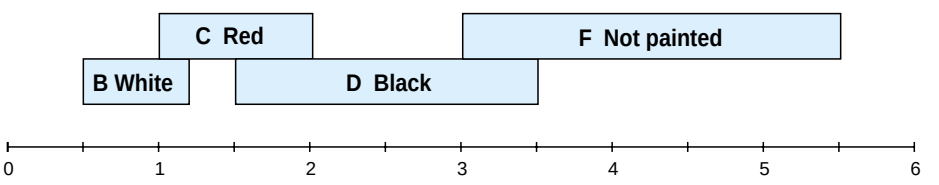


With Mechanical Closure

Dimensions and Weights

Size (mm)	**1"**	**1"**
L	114	114
H	160	200
W	65	65
R	45	95
Weight (kg)	0.55	0.70

Spring Selection Diagram



Spring	Pressure Range (bar) Min	Max
B	0.5	1.2
C	1.0	2.0
D	1.5	3.5
F	3.0	5.5

Model 150-PRV

Specifications

Sizes: 1 1/2"

End Connections: BSP, NPT
Female-female threading

Flow Capacity Range:
0.45-18.2 m³/h

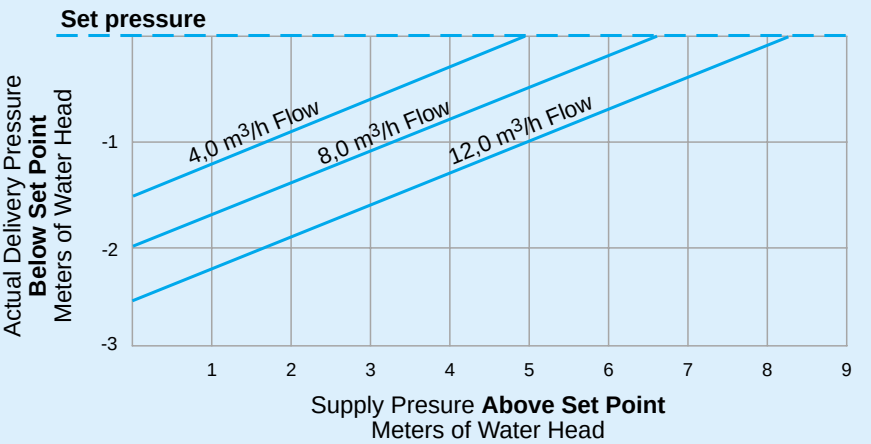
Pressure Rating:
Minimum working pressure
0.7 bar (10 psi)
maximum working pressure
9 bar (130 psi)

Temperature Range:
Water up to 80°C (180°F)

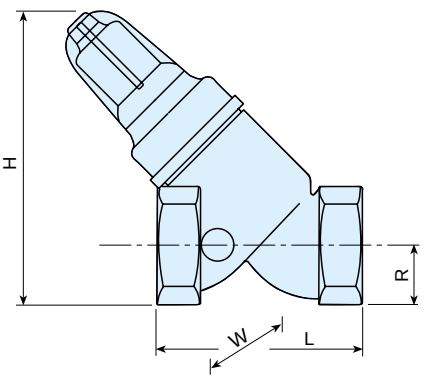
Materials:
Body: Brass
Seals: Buna-N and NR
Diaphragm: Nylon-fabric, reinforced Buna-N
Spring and shafts: Stainless steel

Standard Feature:
Drip-tight sealing

Fall off Set Delivery Pressure on Short Supply Pressure at Different Flows

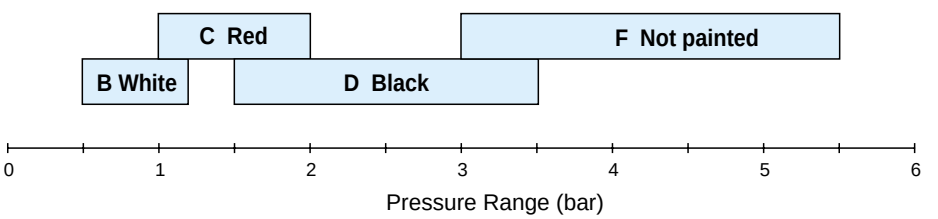


Dimensions and Weight



Size (mm)	1 1/2"
L	106
H	155
W	65
R	30
Weight (kg)	1.0

Spring Selection Diagram



Pressure Range (bar)		
Spring	**Min**	**Max**
B	0.5	1.2
C	1.0	2.0
D	1.5	3.5
F	3.0	5.5

AR Series
AIR AND VACUUM RELEASE VALVES
For waterworks, irrigation and turf systems

The exclusive **AR Series**, plastic and metal manufactured products offer outstanding features and advantages:

- Perfect sealing under very low system pressure.
- High flow capacity.
- Patented operation together with smart design.
- Simple, compact and reliable product.

The **BERMAD AR Series** air and vacuum release valves include four basic models:

1" Automatic pressure air release valve (Model 01-ARA), for the automatic release of entrapped air pockets from pressurized systems.

2" Kinetic air and vacuum release valve (Model 02-ARK), with large orifice, for the release of large quantities or air from filling pipelines and for admitting air into quick-draining pipelines to prevent vacuum damage.

2" Combination air and vacuum release valve (Model 02-ARC), in which the features of the two previous models are incorporated in one single valve body, for safe pipeline filling and draining and for releasing air pockets during system operation.

1/2" Vacuum breaker (Model ARV), prevents drip lines from clogging in tough topographic conditions and in sub-surface drip-irrigation system.

FEATURES

- Only one or two moving parts, depending on model.
- Corrosion-resistant construction.
- Pressure-balanced float, free of distortion or collapse.
- Special drip-tight dynamic seal.
- Exclusive kinetic design prevents floats from being blow shut.
- Perfect sealing under system pressure as low as 0.1 bar.

01-ARA-I

02-ARC-I

01-ARA-P

02-ARC-P

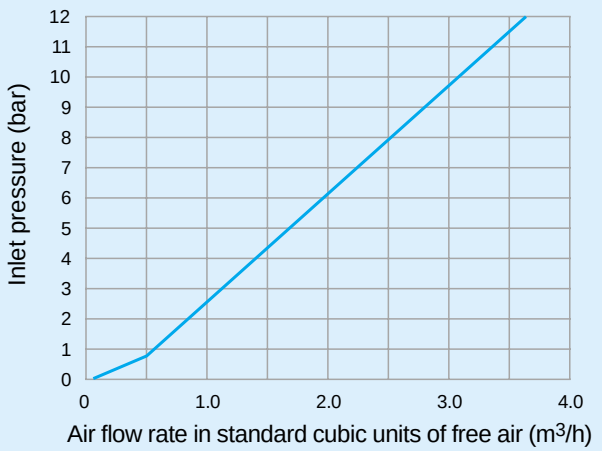
TECHNICAL DATA

Specifications

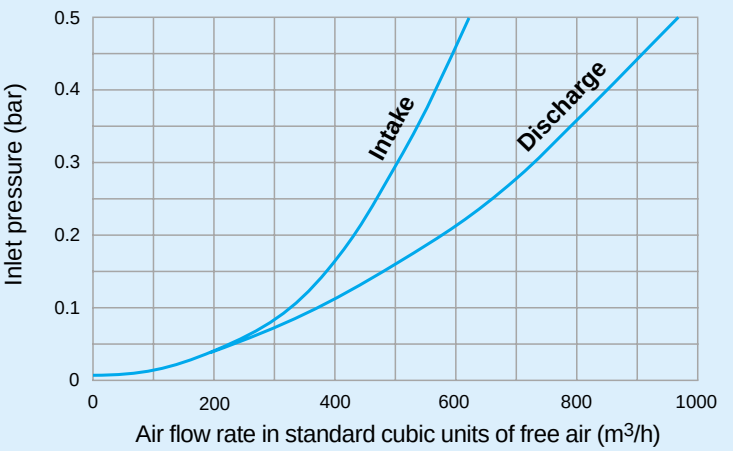
- **Sizes:**
  1" Automatic (Model 01-ARA)
  2" Kinetic (Model 02-ARK)
  2" Combination (Model 02-ARC)
- **End Conection:**
  Threading BSP, NPT
- **Pressure Rating:**
  – Plastic body models:
  ISO: PN 10
  – Cast iron models:
  ISO: PN 16; ANSI: # 125
- **Operating Pressure Range:**
  – Plastic body:
  0,1-10 bar (1.5-150 psi)
  – Iron body:
  0,1-16 bar (1.5-225 psi)
- **Temperature Range:**
  Water, 4-80°C (40-180°F)
- **Materials:**
  Body and cover: Plastic or polyester-coated cast iron
  Floats and kinetic shield: Plastic
  Automatic orifice: Stainless steel
  Seals: Buna-N and NR

Performance Charts

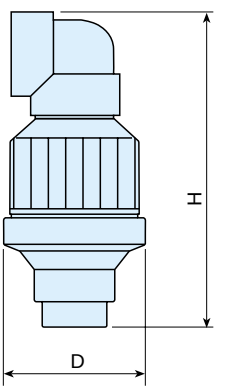
Automatic orifice for the release of air under pressure (Models 01-ARA and 02-ARC)



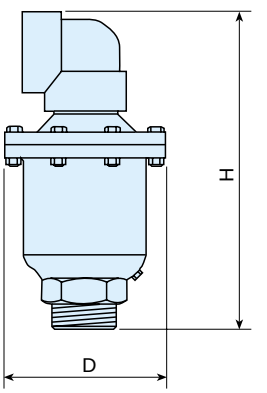
Kinetic large orifice for air and vacuum release (Models 02-ARK and 02-ARC)



Dimensions and Weights



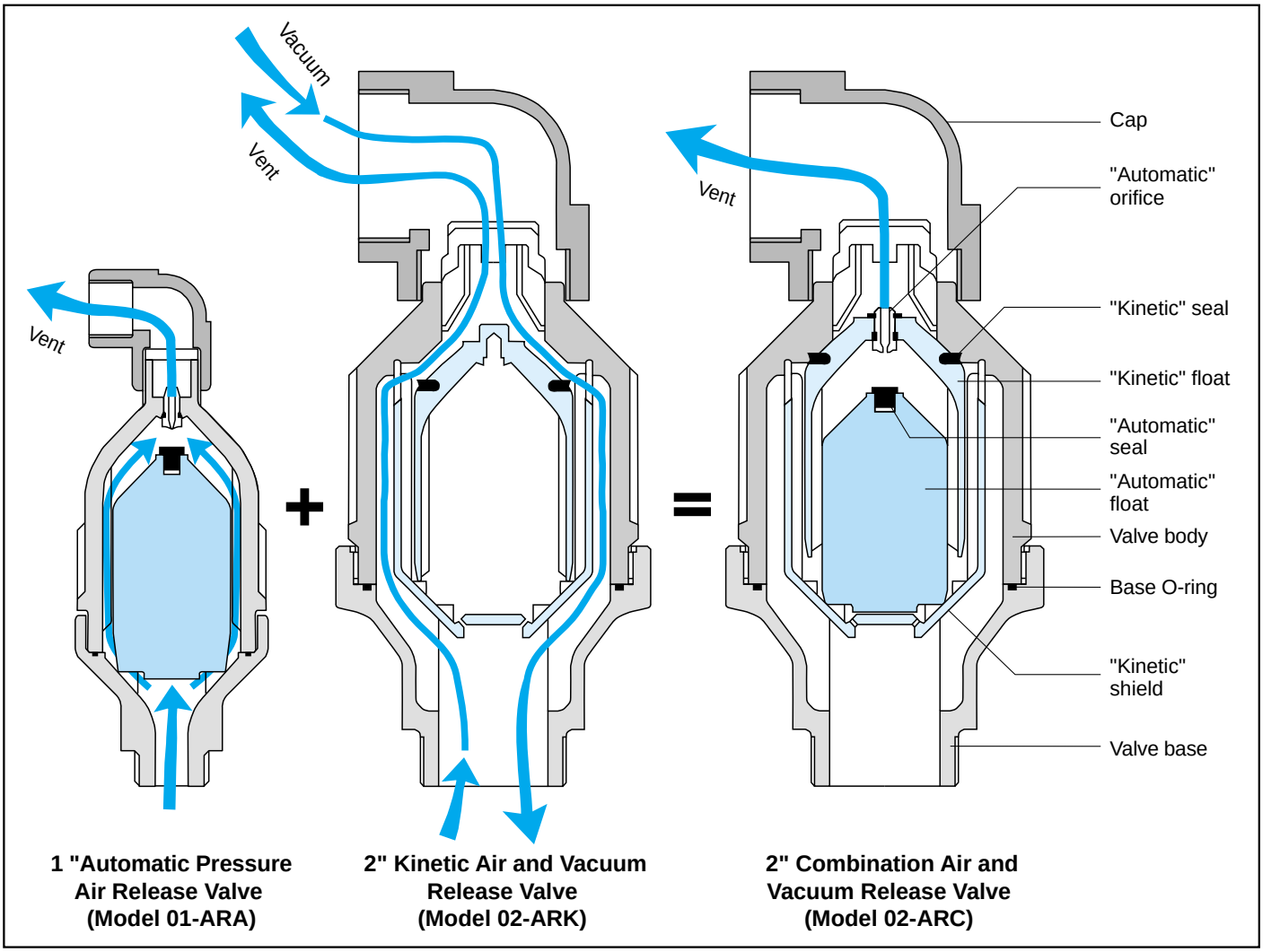
Plastic Body



Metallic Body

Valve Model	Size	D (mm)	H (mm)	Weight (kg)	D (mm)	H (mm)	Weight (kg)
Automatic (01-ARA)	1"	85	180	0.9	120	230	3.0
Kinetic (02-ARK)	2"	130	245	2.7	150	290	5.4
Combination (02-ARC)	2"	130	245	2.8	150	290	5.5

VALVE ASSEMBLY

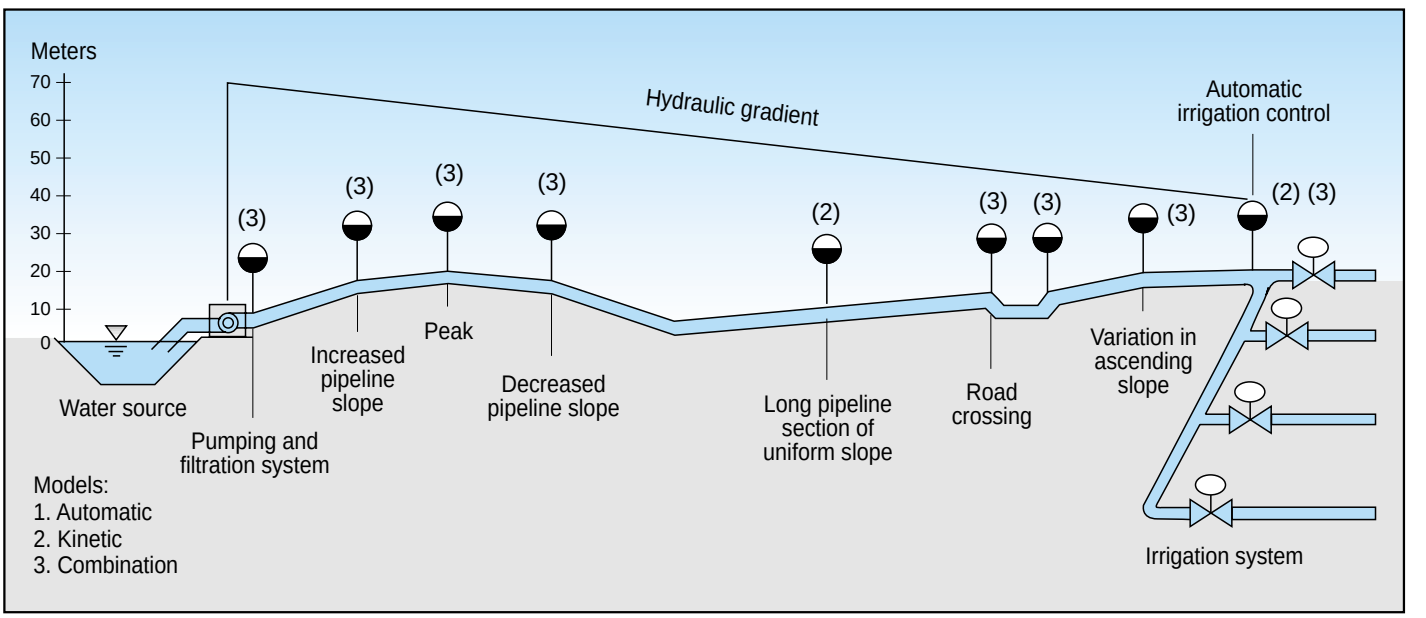


1 "Automatic Pressure Air Release Valve (Model 01-ARA)

2" Kinetic Air and Vacuum Release Valve (Model 02-ARK)

2" Combination Air and Vacuum Release Valve (Model 02-ARC)

TYPICAL APPLICATIONS



AR Series

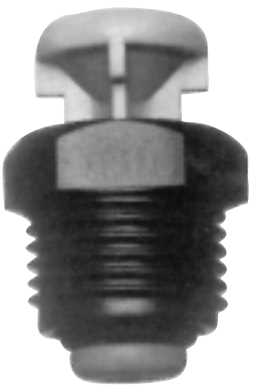
1/2" VACUUM BREAKER (ARV)

For drip irrigation, filters and fertilizer tanks

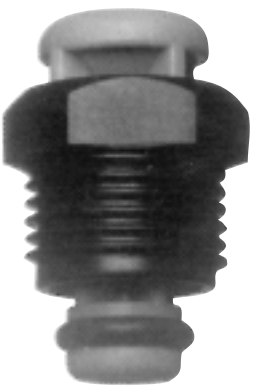
The **BERMAD AR 1/2" Vacuum Breaker (ARV)** has been designed to prevent clogging of drippers due to dirt suction under vacuum conditions and to prevent infiltration of toxic substances into the drip system.

FEATURES

- Large air passage
- High resistance to chemicals (all parts are made of plastic)
- Smooth, reliable operation
- Easy to handle and maintain
- Seals even with damaged or missing seals



Closed



Open

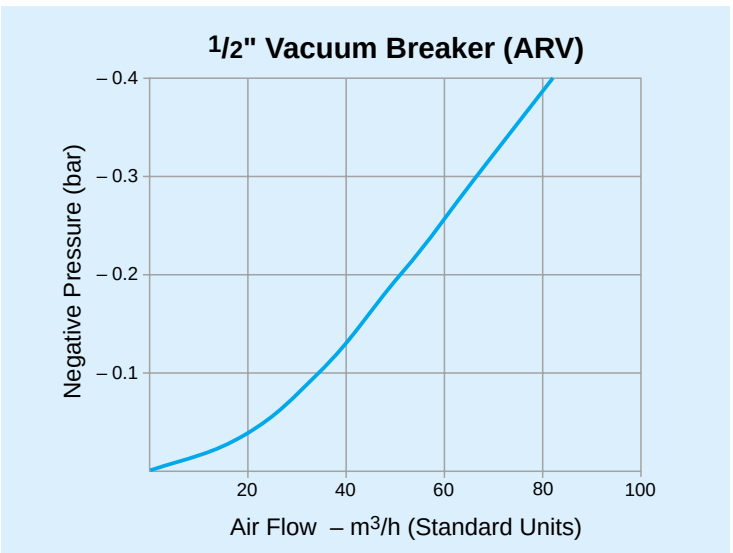
TECHNICAL DATA

Specifications

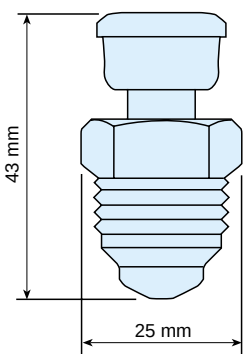
- **Size:** 1/2"
- **End Connection:** male threading, BSP, NPT
- **Max Working Pressure:** 10 bar (150 psi)
- **Temperature Range:** Water up to 80°C (180°F)
- **Materials:** plastic, with Buna-N seal

To order, refer to AR Ordering Guide, page 49

Air Intake Flow Chart



Dimensions and Weight



Weight: 11 gr

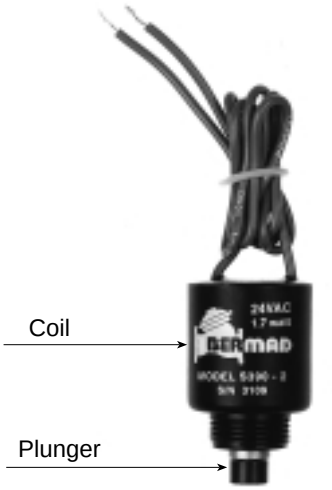
S Series
SOLENOID PILOT VALVES

The **BERMAD S Series** solenoid pilot valves have been specially designed for reliable operation in irrigation systems. They are widely used in conjunction with hydraulic control valves such as the BERMAD 200, 300, 400 and 900 Series.

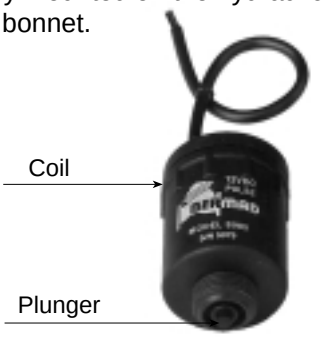
Solenoid S-390 with "D" suffix has the following outstanding advantages:

- Low sensitivity to dirt and voltage fluctuation
- Low operating temperature
- Saves on the cost of cables by reducing the required cross-section

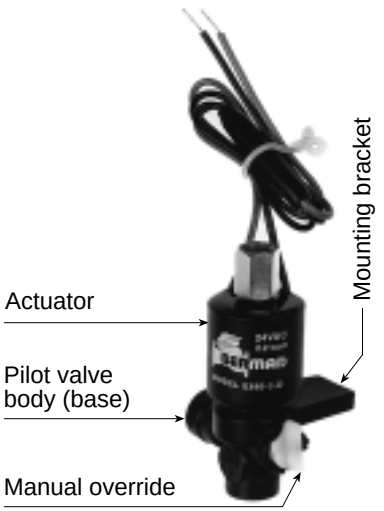
Solenoid Actuator:
S-390-2 (2-way)
Directly mounted on the hydraulic valve bonnet (see BERMAD 200 Series leaflet).



Latching Solenoid Actuator:
Model S-985-2 (2-way)
Latching solenoid actuator can also be used as a pulse actuator directly mounted on the hydraulic valve bonnet.



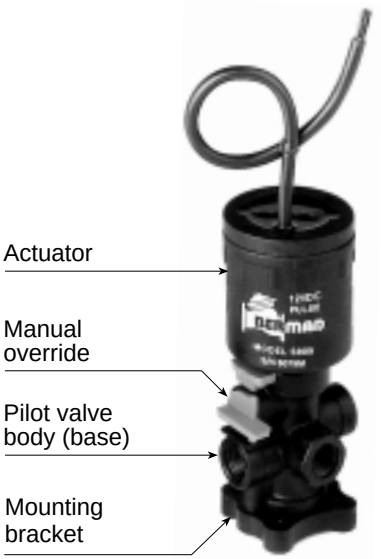
Solenoid Pilot Valves:
S-390-2B (2-way) and S-390-3B (3-way) Pilot valves, consisting of the above solenoid actuators mounted on pilot valve bodies with manual override. These solenoid pilot valves are designed for installation in the control loop of hydraulic control valves.



Latching Solenoid Actuator:
Model S-392 (2-way/3-way)
Bermad S-392 is a dual-position solenoid designed to work with water, built for either direct installation on the 200 Series plastic irrigation valve 3/4"-2" or on a separate base 1/8" and 1/4".
The solenoid excels in its small dimensions and high reliability.

Specifications
- Voltage range: 6-40 V
- Coil resistance: 6Ω
- Pulse width: 20 ÷ 100 mSec.
- Protection: IP 68
- Ambient temperature: 60°C max
- Fluid temperature: 80°C max
- Max operating pressure: 16 Bar
- Materials:
  Seal: NBR
  Metal parts: Stainless Steel
  Plastic parts: Nylon reinforced
  Leads: 0.32 mm^2, 80 cm

Latching Solenoid Pilot Valve:
S-985-3B (3-way) Pulse solenoid pilot valve, consists of an actuator, completely sealed from the control fluid, mounted on a 3-way pilot valve body with manual override. It has been specially developed for use in computerized irrigation systems and its operation is simple and very reliable.
Latching solenoids use permanent magnets coupled with the magnetic circuit of conventional DC solenoids. They can perform pull, holding and release operations by supplying only an instantaneous pulse of current, thus achieving high electric power efficiency.



Model S-390
(2-way and 3-way)

Specifications

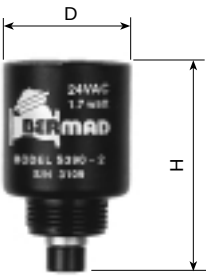
- **Operating Voltages:**
  – 12V AC/DC ± 10%
  – 24V AC/DC ± 10%
- **Pressure Rating:**
  10 bar (140 psi)
- **Operating Temperature (Water):**
  –5° to 70° C
- **Ports:** female 1/8" NPT
- **Leads:** (0.32 mm²)
  – 2-way: 35 cm
  – 3-way: 80 cm
- **Materials:**
  Actuator housing:
  Coated steel
  Pilot valve body: Plastic
  Metal parts: Stainless steel
  Seals: Buna-N

Standard Electrical Data (at 20°C ambient temperature)

Voltage and Power Ratings			AC		DC
			50 Hz	60 Hz	
12V	Current (Amp.)	Inrush	0.23	0.23	0.32
		Holding	0.23	0.23	
	Power Consumption (Watts)		2.2	2.2	3.8
24V	Current (Amp.)	Inrush	0.29/0.13	0.32/0.13	0.15
		Holding	0.14/0.13	0.16/0.13	
	Power Consumption (Watts)		1.7/2.2	1.9/2.2	3.6
			"D"Suffix		

Dimensions and Weights

Actuator + Pilot valve body (base)



Actuator

Size (mm)	S-390-2B	S-390-3B	S-390-2	S-390-3
D	29	29	29	29
H	63	80	41	58
Weight (kg)	0.130	0.142	0.113	0.127

Model S-985/2
(Latching Solenoid
2-way and 3-way)

Specifications

- **Operating Voltages:** 12-40 volts DC
- **Pulse Width:** 20 ÷ 100 mSec

Note:
When operating at 12 V DC, discharge a 4700 µ F capacitor

- **Coil Resistance:**
  S-985 – 2 coils 4Ω, 7.5Ω
  S-982 – 4.2Ω
- **Electrical Connections:**
  S-985 – 3 x 0.35 mm² cable
  S-982 – 2 x 0.32 mm² cable 85 cm long, with black PVC sheathing
- **Ports:** female 1/8" NPT
- **Max Operating Pressure:**
  10 bar (150 psi).
- **Equivalent Orifice Size:** Ø 2.1 mm
- **Mounting:** two screws to solenoid base (self tapping #8)
- **Materials:**
  Plastic parts: Nylon
  Metal parts: Stainless steel
  Seals: Buna-N / EPDM
  Optional: Brass base

Dimensions and Weights

Actuator + Pilot valve body (base)

Actuator

Size (mm)	S-985/982	S-985/982B
D	38	38
H	90	43
Weight (kg)	0.190	0.150

PC Series
HYDRAULIC PILOT VALVES AND CONTROL ACCESSORIES

PC-X MULTI-PURPOSE PILOT VALVE

This 3-way pilot valve has been designed to control hydraulically operated control valves.

The **PC-X** pilot valve is characterized by exceptional control versatility: by changing control ports, the same pilot valve will convert a hydraulic valve into a pressure reducing or pressure sustaining/relief control valve.

Using a **PC-X** pilot valve which vents to the atmosphere for pressure regulation has the advantage of fully opening the main valve when operating conditions call for minimum pressure loss.

The **PC-X** pilot valve can also be used as a hydraulic relay for separating the hydraulic remote signal from the operating pressure in the local valve, thus overcoming difficult topographic and hydraulic remote control conditions.

PC-20 PRESSURE REDUCING PILOT VALVE

This 2-way pressure reducing pilot valve modulates the opening of the hydraulic control valve for reducing high supply pressure to a lower, constant downstream pressure, regardless of changing operation conditions.
The **PC-20** pressure reducing pilot valve is typically employed in BERMAD's pressure reducing control valves with 2-way modulating control loops.

PC-30 PRESSURE SUSTAINING PILOT VALVE

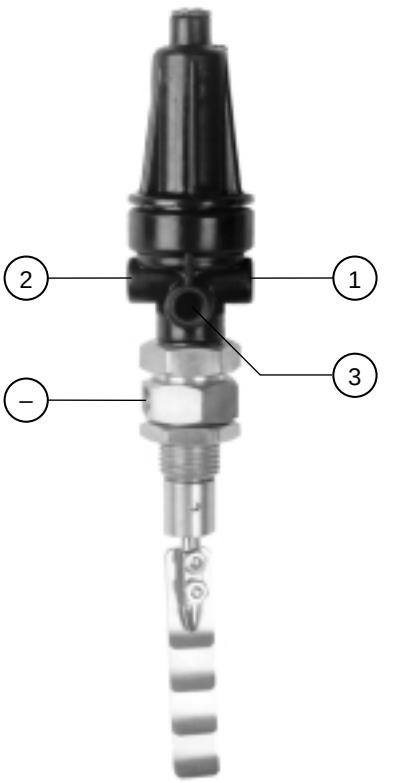
This 2-way pressure sustaining pilot valve modulates the opening of the hydraulic control valve for relieving excessive pipeline pressure or for sustaining a constant, preset upstream pressure, regardless of changing operation conditions.

The **PC-30-** pressure sustaining pilot valve is typically employed in BERMAD's pressure relief ("quick" type) and pressure sustaining control valves with 2-way modulating control loops.

PC-70-2-WAY AND PC-70-3-WAY FLOW RATE PILOT VALVES (PADDLE TYPE)

These innovative flow rate pilot valves have been designed for limiting the flow rate to a set point, regardless of fluctuations in pressure conditions. The pilot valve has a paddle positioned within the flow stream. When the flow rate tends to increase, the paddle responds, causing the pilot valve to throttle down the main valve, thus limiting the flow rate.

The **PC-70-2WAY** and **PC-70-3 WAY** are typically employed in conjunction with the 900 Series hydrometers, for limiting the flow rate in each individual irrigation block. The Model 927 hydrometer is very popular, as it combines pressure reducing and flow rate control, together with water metering.

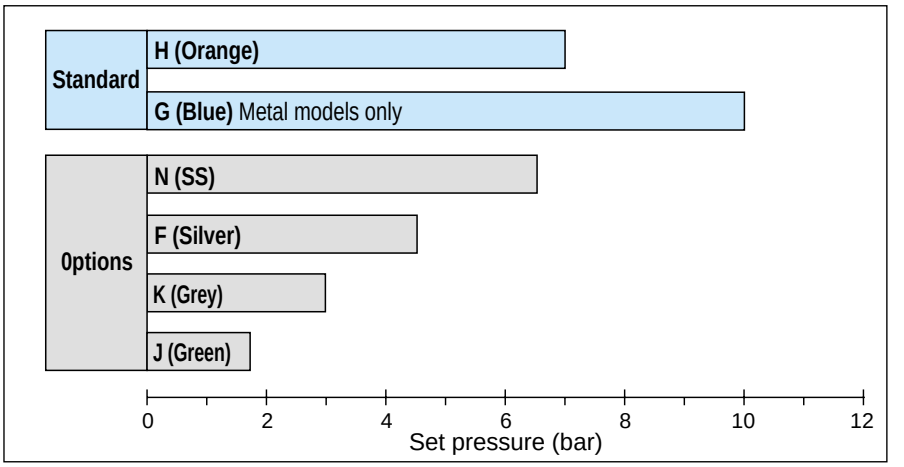


TECHNICAL DATA

Specifications

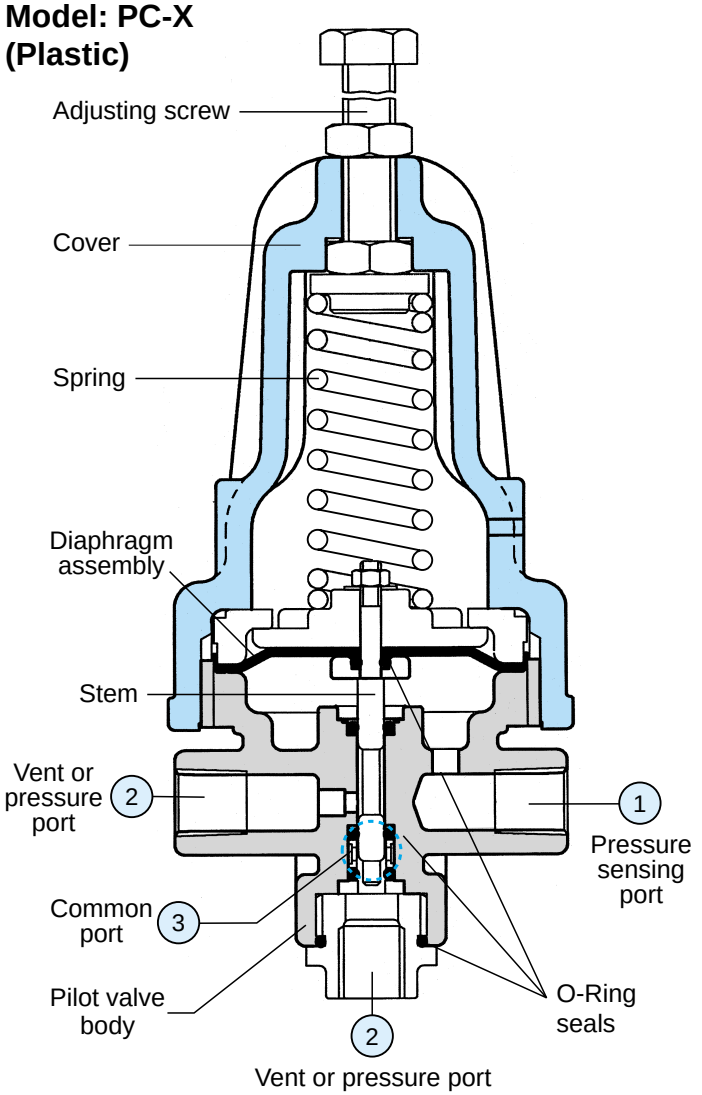
- **End Connections:** female threaded 1/8" NPT
- **Operating Pressure Range:** 10/16 bar (0-150/225 psi)
- **Temperature Range:** water up to 80°C (180°F)
- **Materials:**
  Valve body: Plastic or Brass
  Valve cover: Plastic or Brass alloy
  Inner parts: Stainless steel, Brass, Plastic
  Diaphragm and seals: Buna-N

Spring Selection Diagram



3-WAY PILOT VALVE ASSEMBLY

Model: PC-X (Plastic)



CONTROL ACCESSORIES

Pressure Selecting Shuttle Valve

This pressure selecting shuttle valve has been designed to automatically select the higher between two pressure sources. It has 1/8" NPT threads and barbs for 6 and 8 mm control tubes. The valve is typically employed in hydraulic remote control system.

Three-Position Selector

This three-position selector with four ports has been designed for the selection of hydraulic control modes (open, closed or automatic control). It enable manual override for opening or closing the main control valve.

In line Filter

For filtration of command system water. Self-cleaning by water flow in the pipe.

Materials:

- Body: Plastic/Brass/S.S.
- Screen: Stainless steel
- Sizes: 1/8", 1/4", 3/8" & 1/2" NPT

FT Series
PLASTIC CONTROL TUBE FITTINGS

The BERMAD FT Series plastic control fittings have been specially designed for use in hydraulic valve control loops.
The fittings are characterized by simple, easy and reliable hydraulic control connections.

Specifications

- **Sizes:**
  – Tube: 6 mm, 8 mm
  – Threading: 1/8" & 1/4"
- **Connections:**
  – Male threading, NPT
  – Barb and nut lock. The barbed end can be cut and the fitting can be used as a nipple.
- **Pressure Rating:**
  – ISO: PN 16
  – ANSI: Class 125
- **Operating Pressure Range:** up to16 bar (150 psi)
- **Temperature Range:** Water up to 80°C (180°F)
- **Materials:** Plastic

Name	Cat. No.	Fig.	Connections
Male adaptor	FT-16 FT-18		Tube (6 mm) - Threading (1/8") Tube (8 mm) - Threading (1/8")
90° Elbow with male thread	FT-26 FT-28 FT-56 FT-58		Tube (6 mm) - Threading (1/8") Tube (8 mm) - Threading (1/8") Tube (6 mm) - Threading (1/4") Tube (8 mm) - Threading (1/4")
Coupling	FT-66 FT-68 FT-88		Tube (6 mm) - Tube (6 mm) Tube (6 mm) - Tube (6 mm) Tube (8 mm) - Tube (8 mm)
90° Tee	FT-96 FT-98		Tube (6 mm) - Tube (6 mm) - Tube (6 mm) Tube (8 mm) - Tube (8 mm) - Tube (8 mm)
90° Tee with male thread	FT-96/1 FT-98/1		Tube (6 mm) - Threading (1/8") - Tube (6 mm) Tube (8 mm) - Threading (1/8")- Tube (8 mm)
Nut	FT-06 FT-08		Tube (6 mm) - Threading (1/8") Tube (8 mm) - Threading (1/8")
Female-male adaptor	FT-48		Threading (1/8") - Threading (1/4")
Threaded plug	FT-38 FT-34		Threading (1/8") Threading (1/4")

700 Series

HYDRAULIC DIAPHRAGM CONTROL VALVES

For automatic control of water supply systems

The **BERMAD 700 Series** hydraulic control valves provide superior performance in the control and regulating of pressure, flow, water level, pumping systems and additional applications in waterworks and industrial systems, as well as in supply networks for irrigation systems.

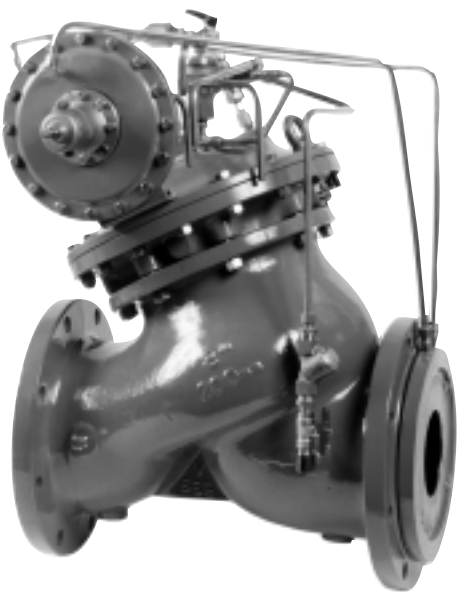
The **BERMAD 700 Series** consists of valves for a wide range of applications and constitutes a product line of impressive completeness. Its unsurpassed reliability has been well proven over many years of use throughout the world.

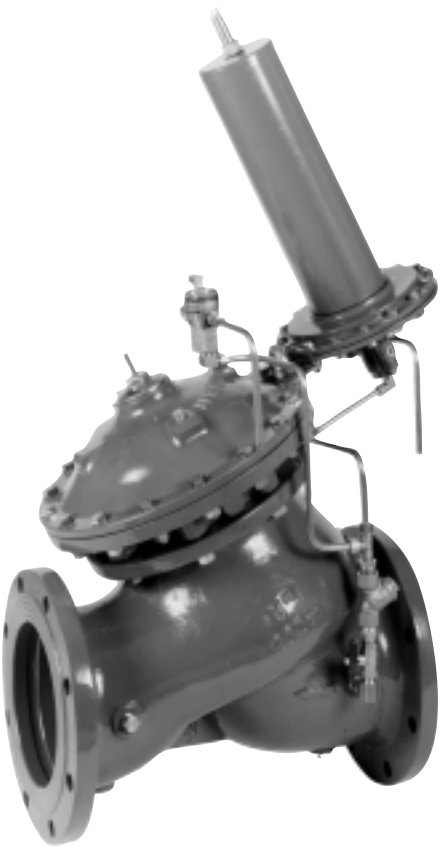
The BERMAD 700 Series is complemented by a comprehensive range of control pilot valves and other control accessories for total flexibility of application.

The **BERMAD 700 Series** control valve are available in sizes from 2" to 24" (50-600 mm) and for working pressures up to 35 bar (500 psi). Pressure ratings and connections are in accordance with ISO, ANSI, BS and JIS Standards.

FEATURES

- **"Y" - or angle-pattern wide valve body** hydrodynamically designed for high flow capacity and low pressure loss.
- **Double-chambered actuator** provides positive, immediate response with accurate control, as well as smooth valve action without causing water hammer.
- **Self-aligning valve closure with resilient seal** provides superior drip-tight valve sealing.
- **Removable full bore seat** free of any bottom stem guide ribs.
- **Optional V-port plug** provides superior control flexibility, from full flow to zero flow, under varying pressure conditions.
- **Industrial quality construction** meets international standards for material quality assurance and hydraulic control valve performance.
- **Certificates and Approvals:** WRc, NASF, FM, UL





TECHNICAL DATA

Specifications

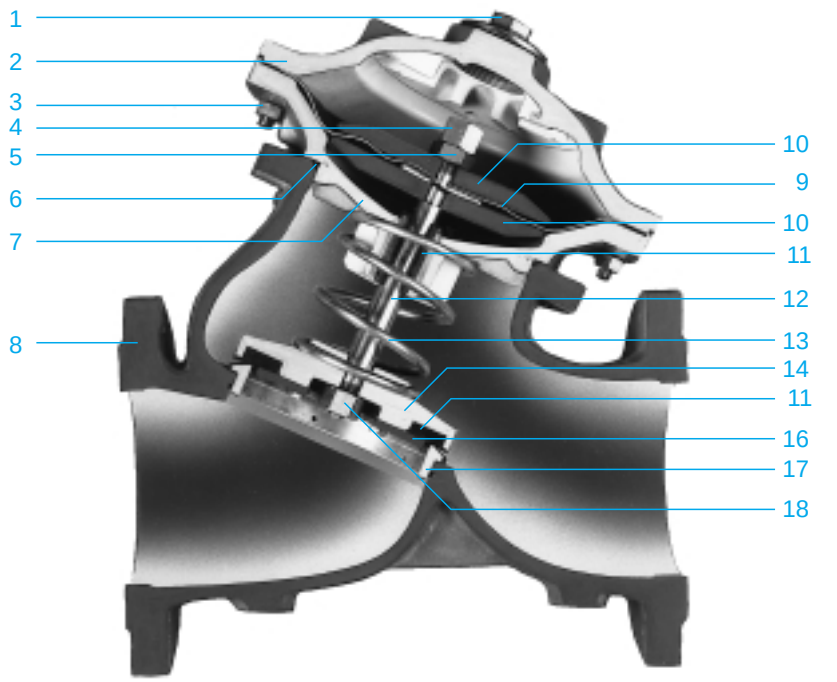
- **Valve Pattern:** "Y" & angle
- **Sizes:** 2"-24"
- **End Connections:**
  2"-3": threaded BSP, NPT
  2"-24": flanged ISO/BS/ANSI
- **Temperature Range:**
  Water up to 80°C (180°F)
- **Materials:**
  Main valve body and actuator: Cast Iron, Polyester-coated
  Main valve trim: Stainless steel, bronze, coated steel
  Diaphragm and seals: Synthetic rubber
  Options: Nitrile; Buna-N; EPDM
  (Other materials and coatings available on request).

For complete technical data please refer to BERMAD 700 Series catalog.

Operating Pressure Range: Cast Iron Standards

Standard	Class	Pressure Range		
		Units	Maximum	Minimum
ISO/DIN/BS 4504	16 25	bar bar	16 25	0.7 0.7
BS 10	D	psi	200	10
ANSI B16.1	125 250	psi psi	175 300	10 10

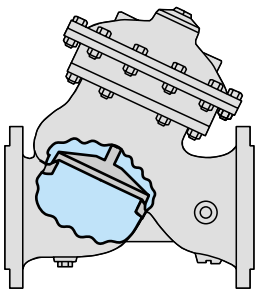
VALVE ASSEMBLY, PARTS AND MATERIALS LIST

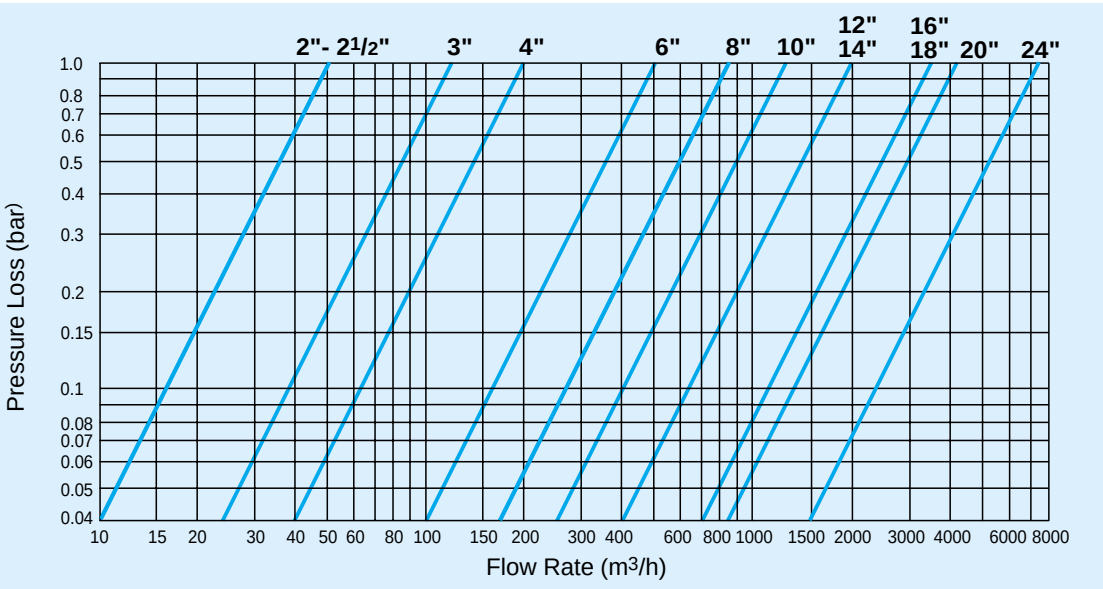


1	Cover plug	Bronze
2	Cover	Cast Iron
3	Cover bolt & nut	Galvanized Steel
4	Shaft 7 indicator lock nut	S.S. 303
5	Shaft nut	S.S. 303
6	Valve body "O" ring	Buna N
7	Separating partition	Cast Iron
8	Valve body	Cast Iron
9	Diaphragm	NBR Nylon Fabric
10	Diaphragm washers	Coated Steel Reinforced
11	Shaft bearing	Bronze
12	Shaft	S.S. 303
13	Spring	S.S. 302
14	Seal disc	Cast Iron/Steel
15	Seal disc seal	Buna N/NR
16	Seal disc washer	Bronze
17	Valve seat (removable)	Bronze/S.S.
18	Seal disc nut	S.S. 303

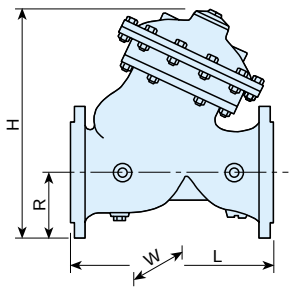
Flow Chart

For flat disc, "Y"-pattern valves





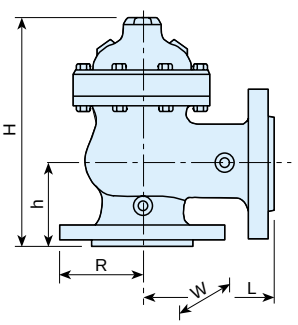
Dimensions and Weights



"Y" PATTERN VALVE – FLANGED

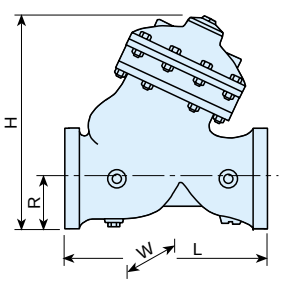
	Size (mm)	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"*
ANSI 125 ISO 10; 16	L	205	209	250	320	415	500	605	725	733	990	1000	1100	1540
	W	155	178	200	223	320	390	480	550	550	740	740	740	1250
	R	78	89	100	112	140	170	202	240	262	298	320	358	470
	H	235	246	309	362	490	581	686	820	842	1096	1117	1155	1680
	Weight (kg)	10.6	13	22	37	75	125	217	370	381	846	945	962	3250
ANSI 250 ISO 20; 25	L	210	222	264	335	433	524	637	762	767	1024	1030	1136	Consultar representante BERMAD
	W	165	185	207	250	320	390	480	550	570	740	740	750	
	R	82	92	104	125	158	188	222	255	285	318	355	375	
	H	240	250	313	375	508	600	706	835	865	1116	1152	1172	
	Weight (kg)	12.2	15	25	43	85	146	245	410	434	900	967	986	

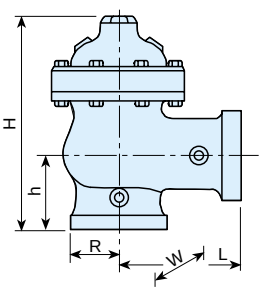
* Available also in sizes 28" (700 mm) to 32" (800 mm). Consult BERMAD representative.



ANGLE PATTERN VALVE – FLANGED

	Size (mm)	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"
ANSI 125 ISO 10; 16	L	121	140	152	190	225	265	320	396	400	450
	W	155	178	200	222	320	390	480	550	550	740
	R	77	89	100	111	140	170	202	240	262	298
	H	223	242	281	338	441	545	638	777	777	1076
	h	82	102	102	127	152	203	219	275	275	369
	Weight (kg)	10	20	21.5	35	71	118	205	350	370	800
ANSI 250 ISO 20; 25	L	127	149	159	200	234	277	336	415	419	467
	W	165	185	207	250	320	390	480	550	550	740
	R	82	92	103	125	158	187	222	255	285	318
	H	230	250	288	346	454	558	654	796	796	1093
	h	89	109	108	135	165	216	235	294	294	386
	Weight (kg)	11.5	13.5	23	41	81	138	233	390	425	855

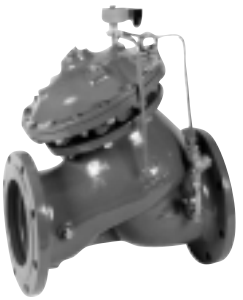




THREADED VALVE

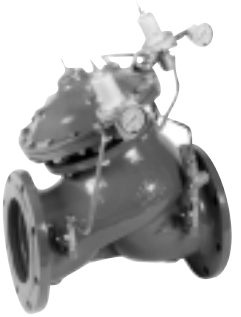
		"Y" PATTERN			ANGLE PATTERN		
	Size (mm)	2"	2½"	3"	2"	2½"	3"
BSP; NPT	L	155	212	250	120	140	159
	W	122	122	163	122	122	163
	R	40	48	55	40	47	55
	H	201	208	264	225	242	294
	h	—	—	—	82	102	114
	Weight (kg)	5.5	8	17	5.5	7	15

MAIN MODELS



710 – Electric Control Valve: opens and closes in response to remote electric command.

720 – Pressure Reducing Control Valve: reduces and maintains a constant, preset downstream pressure, regardless of fluctuations in flow and supply pressure conditions.

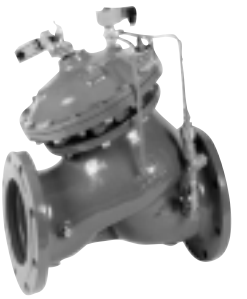


730 – Pressure Relief / Sustaining / Back Pressure Control Valve: maintains a constant, preset upstream pressure, regardless of fluctuations in upstream potential and/or system demand.

735 – Surge Anticipating Control Valve: protects pumps and pipes against pressure surge caused by rapid change of flow such as on power failure.

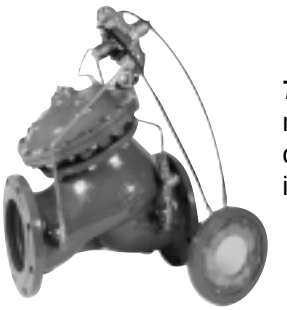
73Q - Pressure Relief Valve (Quick Type): Reliefs pressure, acts as safety valve, pilot valve actuated. Provides complete protection against uncontrolled over pressure for supply lines.

More features and combinations of the main models are available



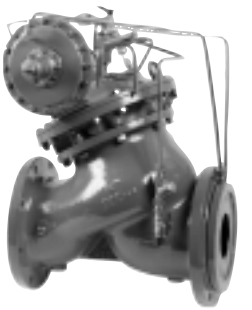
740 – Pump Control Valve: prevents pump startup and shutoff pressure surges; closes immediately on power failure; acts also as check valve.

750 – Reservoir Float Control Valve: opens to fill reservoirs and closes drip-tight when water reaches preset level. Available in modulating and On/Off models.



770 – Flow Control Valve: maintains a constant, preset rate-of-flow, regardless of fluctuations in system pressure and demand.

780-AX – Altitude Control Valve: controls water level in reservoirs without using floats or other controls mounted in the tank.



790 – Pipe Burst Control Valve: closes when set flow-rate is exceeded.

Conversion Table

TO CONVERT FROM:	TO:	MULTIPLY BY:
PRESSURE		
kg/cm^2	psi	14.22
bar	psi	14.50
kPa	psi	0.145
WATER HEAD		
m	psi	1.422
FLOW		
l/s	gpm	15.873
m^3/h	gpm	4.405
LENGTH		
mm	in	0.0394
m	ft	3.2808
VOLUME		
l	gal	0.264
m^3	gal	264.2
m^3	ft^3	35.315
WEIGHT		
kg	lb	2.205

TO CONVERT FROM:	TO:	MULTIPLY BY:
PRESSURE		
psi	kg/cm^2	0.070
psi	bar	0.069
psi	kPa	6.896
WATER HEAD		
psi	m	0.703
FLOW		
gpm	l/s	0.063
gpm	m^3/h	0.227
LENGTH		
in	mm	25.40
ft	m	0.3048
VOLUME		
gal	l	3.785
gal	m^3	0.00378
ft^3	m^3	0.0283
WEIGHT		
lb	kg	0.454

PRESSURE
kg/cm^2 - kilogram per square centimetre
psi - pound per square inch
bar - bar
kPa - kilo pascal

FLOW
l/s - litre per second
m^3/h - cubic metre/hour
gpm - gallon per minute

LENGTH
mm - millimetre
m - metre
in - inch
ft - foot

VOLUME
l - litre
gal - gallon
m^3 - cubic metre
ft^3 - cubic foot

WEIGHT
kg - kilogram
lb - pound

Note: gal and gpm = U.S.A. gallons

CONTROL VALVES BERMAD

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English

PCXAE01 - ver 12/01