

IR-100 hYflow Basic Valve

The BERMAD basic Model IR-100 hYflow diaphragm actuated, hydraulically operated valve is at the leading edge of control valve design. It combines simple and reliable construction with superior performance, while at the same time being virtually free of the typical limitations associated with standard control valves. BERMAD's automatic water control valves are designed for vertical or horizontal installation and are available in sizes 1½", 2", 2½", 3", 4" & 6".

The Model IR-100 hYflow, made from industrial durable glass-filled nylon, is engineered to meet rough service conditions with high chemical and cavitation resistance.

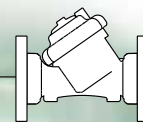
The hYflow 'Y' valve body design includes a full bore seat with unobstructed flow path, free of any in-line ribs, supporting cage, or shafts. Its unitized Flexible Super Travel (FST) diaphragm and guided plug provide a significantly 'look through' passage from end to end resulting in ultra-high flow capacity with minimal pressure loss. The combination of a long travel guided valve plug, peripherally supported diaphragm, and replaceable valve seal provides:

- No chattering or slamming closure.
- Accurate and stable regulation with smooth motion.
- Low operating pressure.
- Low diaphragm erosion and distortion.
- Diaphragm and spring fully meet the valve's operating pressure range requirements.

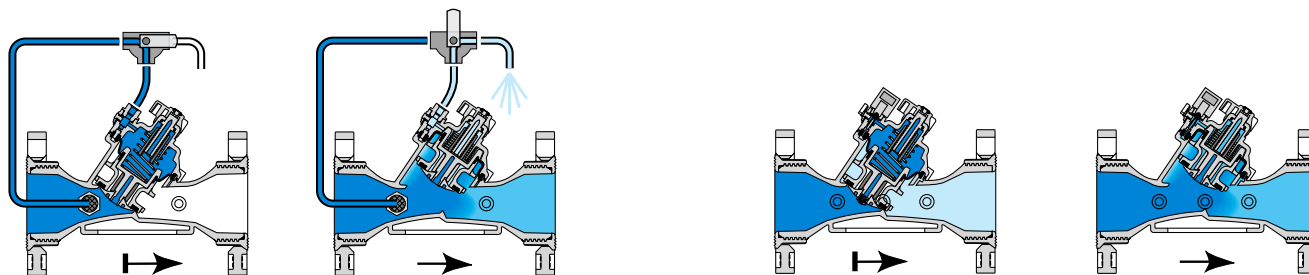
Designed for service under a wide range of pressure and flow conditions, from dripping to maximum flow, the IR-100 hYflow excels at being a user-friendly control valve:

- Simple design with few parts guarantees easy in-line inspection and service.
- Adaptable on-site to a wide range of end connection types and sizes.
- Articulated flange connections isolate the valve from pipeline bending and pressure stresses.





On-Off Modes



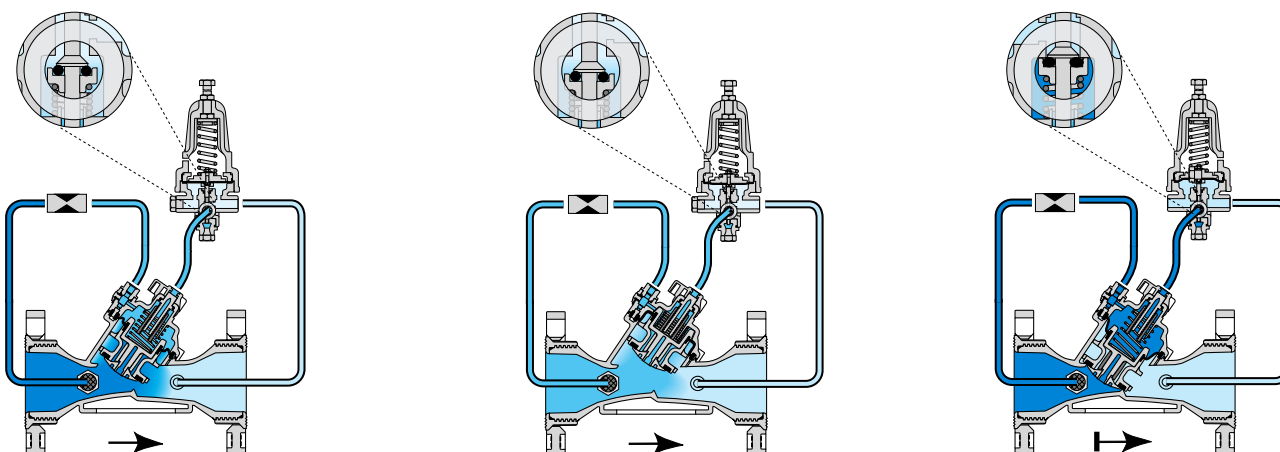
3-Way Control

Line pressure applied to the control chamber of the valve creates a hydraulic force that moves the valve to the closed position and provides drip tight sealing. Discharging pressure from the control chamber to the atmosphere causes the line pressure under the plug to open the valve.

2-Way Internal Control

Line pressure enters the control chamber through the internal restriction. The closed solenoid causes pressure to accumulate in the control chamber, thereby shutting the valve. Opening the Solenoid releases more flow from the control chamber than the restriction can allow in. This causes pressure in the control chamber to drop, allowing the valve to open.

2-Way Modulating Modes (Pressure Reducing Pilot)



Modulating to close

Line pressure enters the control chamber through the internal restriction. The pilot controls outflow from the control chamber. Throttling when it senses a pressure rise, it causes pressure to accumulate in the control chamber, thereby forcing the valve to modulate closed.

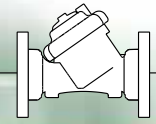
Modulating to Open

The pilot modulates open when it senses a pressure drop, releasing more flow from the control chamber than the restriction can allow in. This causes the accumulated pressure in the control chamber to drop and the valve modulates open.

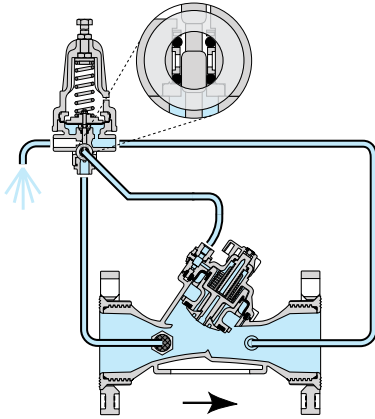
Zero Flow Position

When demand drops to zero, downstream pressure begins to rise as the flow enters a closed line. The pilot closes, initiating the valve's irreversible closing process, eventually causing it to seal drip tight.



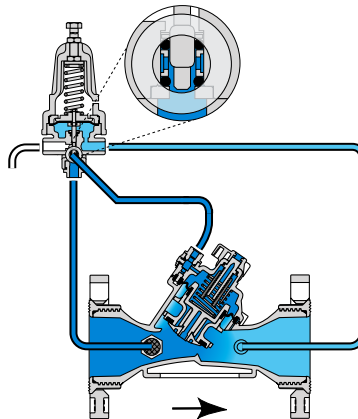


3-Way Control Modes (Pressure Reducing)



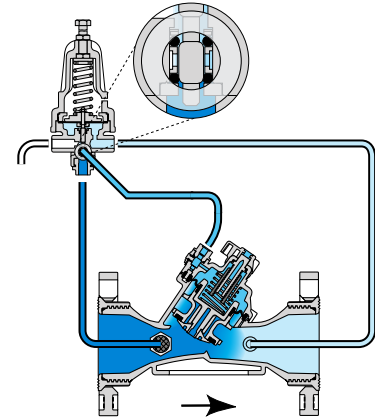
Fully Open Position

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



Modulating to Close

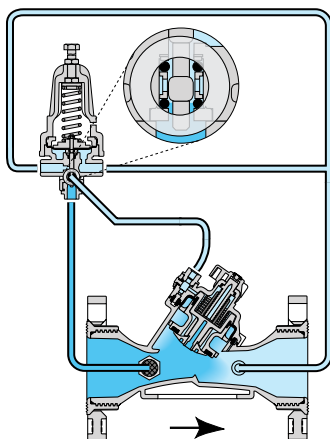
The pilot switches upon pressure rise, blocking the drain port and opening the supply pressure port. This pressurizes the control chamber, forcing the valve to modulate closed.



Locked Position

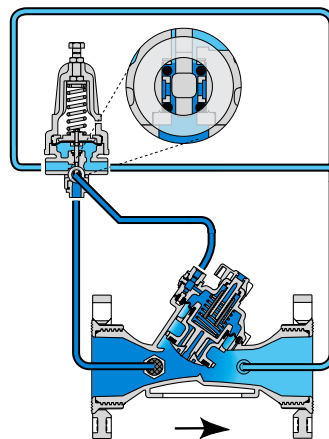
When sensed pressure is equal to setting, the pilot blocks both the drain and the supply pressure ports. This locks the pressure in the control chamber, freezing valve opening in its last position until conditions change.

3/2-Way Control Modes (Pressure Reducing)



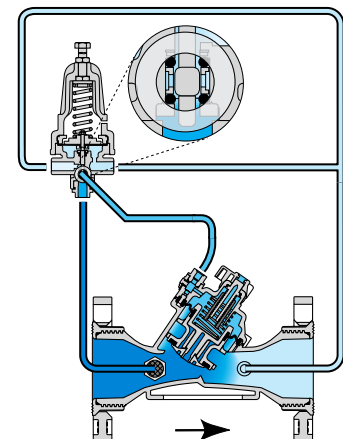
Modulating to Open

When pressure drops, the pilot restricts the flow path through the supply pressure port, and widens the flow path through the drain port. This releases more flow from the control chamber than can be allowed in, thereby causing the valve to modulate open.



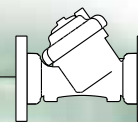
Modulating to Close

Upon pressure rise, the pilot widens the flow path through the supply pressure port, and restricts the flow path through the drain port. This allows more flow into the control chamber than can be released, thereby pressurizing it and forcing the valve to modulate closed.



Stable Conditions

As long as flow and pressure conditions are constant, the pilot freezes the control chamber inlet and outlet flow ratio. This keeps the valve opening rate constant, allowing the valve to react "on-line" to any anticipated changes in supply and/or demand conditions.



[1] Cover Ring

The cover ring fastens valve cover to body, stiffening and strengthening the valve body, enabling simple maintenance. A cover ring key is available.

[2] "Snap-On" Bracket

For installation of components.

[3] Valve Cover

The cover's strong construction meets rough service conditions. Optional cover types (3 and smaller valves) are capable of accepting a Flow Stem, a Flow Stem + Position Indicator, and a 2-Way Solenoid (2W-N1 Electric Type).

[4] Auxiliary Closing Spring

One single high grade stainless steel spring provides a wide operation range, ensuring low opening pressure and secured closing.

[5] Plug Assembly

The unitized Flexible Super Travel (FST) plug assembly combines a long travel guided valve plug, peripherally supported diaphragm, and replaceable diaphragm and valve seal. The diaphragm fully meets the valve's operating pressure range requirements.

[5.1] Diaphragm Holder

[5.2] Diaphragm

[5.3] Plug

[5.4] Plug Seal

[6] hYflow 'Y' Valve Body

Glass-filled nylon construction meets rough service conditions with high chemical and cavitation resistance. End-to-end "look-through" design and full bore seat with unobstructed flow path, free of any in-line ribs, supporting cage, or shafts, enables ultra-high flow capacity with minimal pressure loss.

[7] End Connections

Adaptable on-site to a wide range of end connection types and sizes:

[7.1] Flanges: Plastic or metal "Corona" with elongated slots enable meeting ANSI flange standard.

[7.2] Flange adaptor external thread

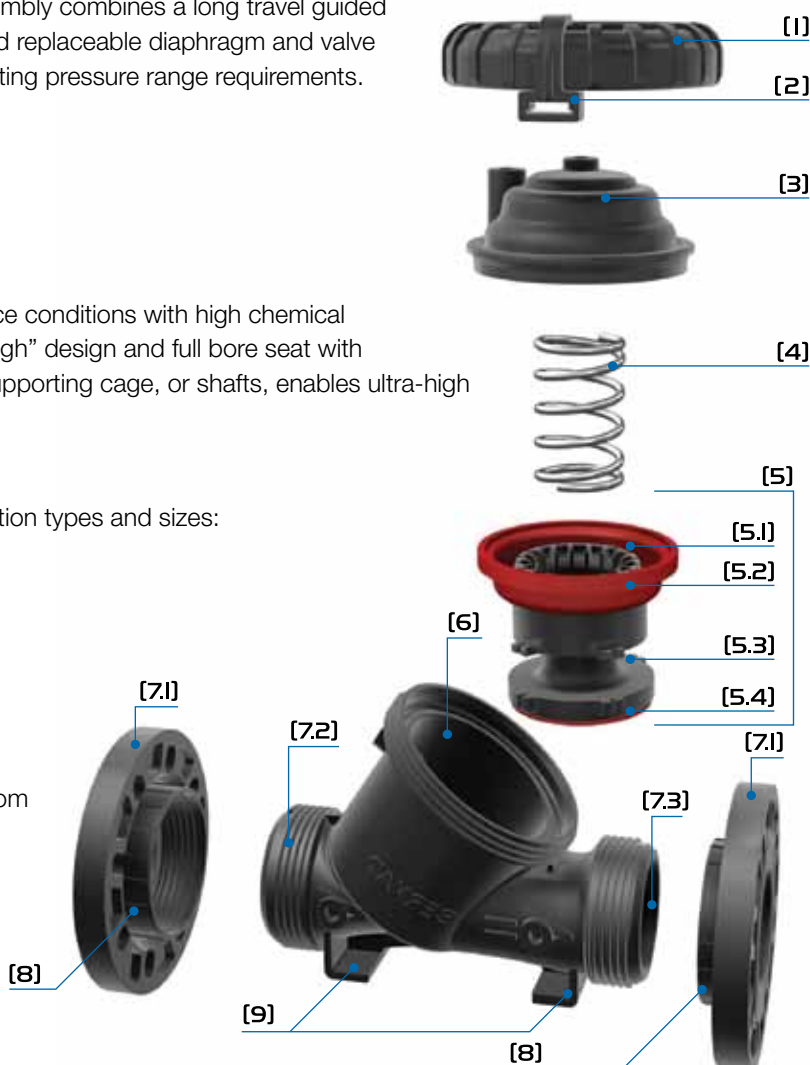
[7.3] Internal threads

[8] Flange Adaptor

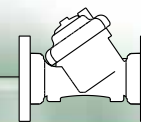
Articulated flange connections isolate the valve from line bending and pressure stresses.

[9] Valve Legs

Stabilizing the valve and serve also as mounting brackets.



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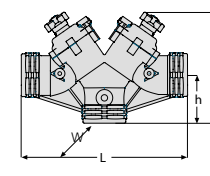
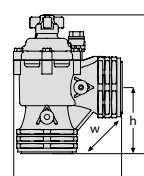
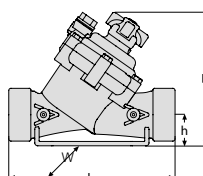
Technical Data

100 Series hYflow

Dimensions & Weights

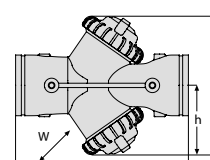
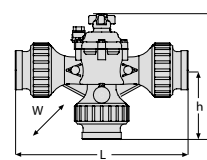
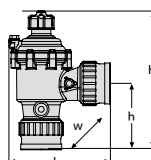
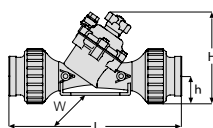
Threaded Valves

Size	1½"	2"	2"L	3"				3"L	
Pattern	Y	Y	Y	Y	Angle	T	Dual	Y	Angle
L (in)	7 ³ / ₄	9	9	11 ³ / ₄	7 ¹ / ₂	10 ¹ / ₂	15 ³ / ₄	11 ³ / ₄	9 ³ / ₈
H (in)	7 ¹ / ₄	7 ¹ / ₄	7 ¹ / ₄	7 ¹ / ₂	9 ⁵ / ₈	9 ⁵ / ₈	10 ¹ / ₂	9 ⁵ / ₈	13 ³ / ₈
h (in)	1 ⁵ / ₈	1 ⁵ / ₈	1 ³ / ₄	2	4 ⁵ / ₈	4 ⁵ / ₈	5	2 ³ / ₈	5 ³ / ₈
W (in)	3 ¹ / ₂	3 ¹ / ₂	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	7 ¹ / ₂	6 ¹ / ₂
Weight (lb)	1.8	1.8	3.0	3.5	3.5	4.6	7.1	6.6	6.2



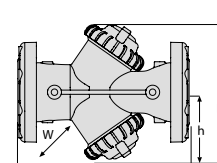
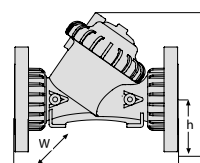
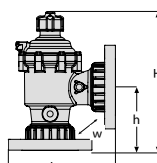
Grooved (Victaulic) Valves

Size	2"	2"L	3"				3"L		4"		6"
Pattern	Y	Y	Y	Angle	T	Dual	Y	Angle	Y	Angle	Y
L (in)	11 ¹ / ₈	11 ¹ / ₈	15 ¹ / ₄	11 ¹ / ₈	15 ¹ / ₂	20 ³ / ₄	15 ¹ / ₄	11 ¹ / ₈	15 ¹ / ₄	11 ¹ / ₈	18 ⁷ / ₈
H (in)	7 ¹ / ₄	7 ¹ / ₄	8	9 ⁵ / ₈	11 ¹ / ₈	12	9 ⁵ / ₈	15 ¹ / ₄	9 ⁵ / ₈	15 ¹ / ₄	15 ¹ / ₄
h (in)	1 ⁵ / ₈	1 ³ / ₄	2 ³ / ₈	4 ⁵ / ₈	6 ¹ / ₄	6 ⁵ / ₈	2 ¹ / ₄	7 ¹ / ₄	2 ³ / ₈	7 ¹ / ₄	7 ⁵ / ₈
W (in)	3 ¹ / ₂	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	7 ¹ / ₂	6 ¹ / ₂	7 ¹ / ₂	6 ¹ / ₂	7 ¹ / ₄
Weight (lb)	2.0	3.2	4.9	4.9	6.6	9.1	8.0	7.6	8.2	7.8	19.4



Flanged Valves

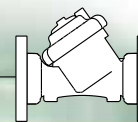
Size	3"				3"L				4"				6"
Pattern	Y		T		Y		Angle		Y		Angle		Y
Flange Type	GRN	Metal	GRN	Metal	GRN	Metal	GRN	Metal	GRN	Metal	GRN	Metal	GRN
L (in)	12 ¹ / ₈	12 ¹ / ₈	11	11	12 ³ / ₁₆	12 ³ / ₁₆	11 ¹ / ₄	11 ¹ / ₄	13 ³ / ₄	13 ³ / ₄	11 ¹ / ₄	11 ¹ / ₄	18 ⁷ / ₈
H (in)	10 ¹ / ₁₆	10 ¹ / ₁₆	9 ¹ / ₄	9 ¹ / ₄	11	11	14 ⁵ / ₈	14 ⁵ / ₈	11 ⁷ / ₁₆	11 ⁹ / ₁₆	14 ⁵ / ₈	14 ⁵ / ₈	15 ¹ / ₄
h (in)	3 ¹⁵ / ₁₆	3 ¹⁵ / ₁₆	4 ⁵ / ₈	4 ⁵ / ₈	3 ¹⁵ / ₁₆	3 ¹⁵ / ₁₆	6 ⁵ / ₈	6 ⁵ / ₈	4 ⁷ / ₁₆	4 ⁷ / ₁₆	6 ⁵ / ₈	6 ⁵ / ₈	7 ⁵ / ₈
W (in)	7 ⁷ / ₈	7 ⁷ / ₈	5 ¹ / ₄	5 ¹ / ₄	7 ⁷ / ₈	7 ⁷ / ₈	8 ¹³ / ₁₆	8 ¹³ / ₁₆	8 ¹³ / ₁₆	8 ¹³ / ₁₆	8 ¹³ / ₁₆	8 ¹³ / ₁₆	7 ¹ / ₄
Weight (lb)	2.97	9.68	3.37	10.1	8.80	12.98	8.63	12.8	10.78	16.72	10.6	16.55	28.2



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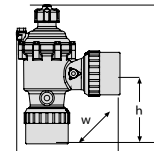
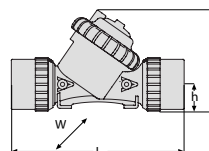
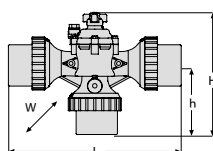
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PVC (Glue-In Socket) Valves

Size	3"				3"L		4	
	Y	Angle	T	Dual	Y	Angle	Y	Angle
L (in)	17	11 ¹ / ₈	17 ¹ / ₈	21	17	12	17	12
H (in)	8 ¹ / ₄	9 ⁵ / ₈	12 ¹ / ₈	10 ¹ / ₂	9 ⁷ / ₈	16 ¹ / ₄	9 ⁷ / ₈	16 ¹ / ₄
h (in)	2 ¹ / ₂	4 ⁵ / ₈	6 ⁷ / ₈	5	2 ¹ / ₂	8 ¹ / ₄	2 ⁵ / ₈	8 ¹ / ₄
W (in)	5 ¹ / ₄	5 ¹ / ₄	5 ¹ / ₄	7 ⁷ / ₈	7 ¹ / ₂	6 ³ / ₈	7 ¹ / ₂	6 ³ / ₈
Weight (lb)	3.5	4.9	3.9	3.5	3.5	3.5	7.1	7.1



End Connections



Female Thread
1¹/₂", 2", 2"L



Female Thread
3", 3"L



PVC Socket
3", 3"L, 4"



ANSI125 Flange Glass
Reinforced Nylon
3", 3"L, 4", 6"



ANSI125 Flange Cast
Iron 3", 3"L, 4"



Grooved
2", 2"L, 3", 3"L, 4", 6"

Technical Specifications

Available Patterns & Sizes:

Y Pattern: 1¹/₂", 2", 2"L, 3", 3"L, 4", 6"

Angle: 3", 3"L, 4"

T: 3", 3"L, 4"

Dual: 3"

Available End Connections:

Threaded: Female NPT; 1¹/₂", 2", 2"L, 3", 3"L

Flanged: ANSI125 3", 3"L, 4", 6"

Grooved: 2", 2"L, 3", 3"L, 4", 6"

PVC Socket (Glue-In): 3", 3"L, 4"

Operational Data:

Pressure Rating: 145 psi

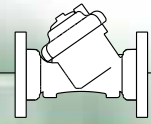
Operating Pressure Range: 5-145 psi

Temperature: Water up-to 140F

Standard Material:

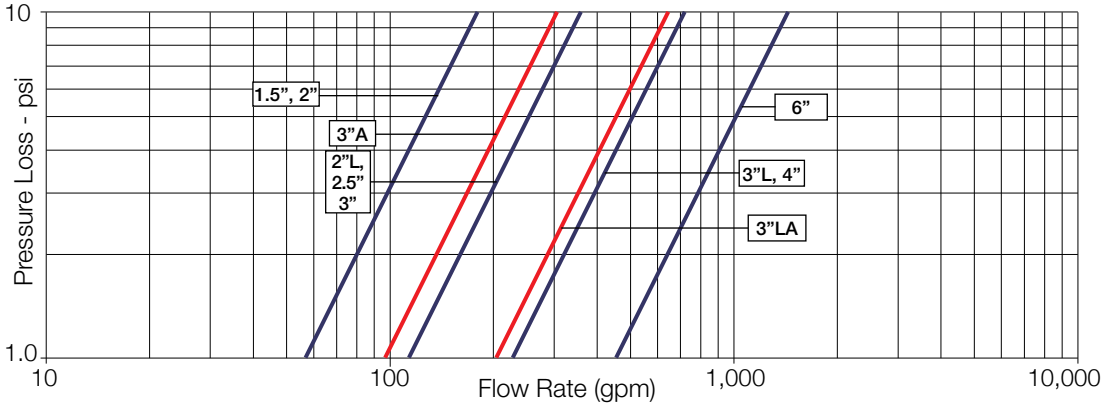
- Body, Cover and Plug: Glass Reinforced Nylon (GRN)
- Diaphragm: NR, Nylon Fabric Reinforced
- Seals: NR
- Cover bolts: Stainless Steel



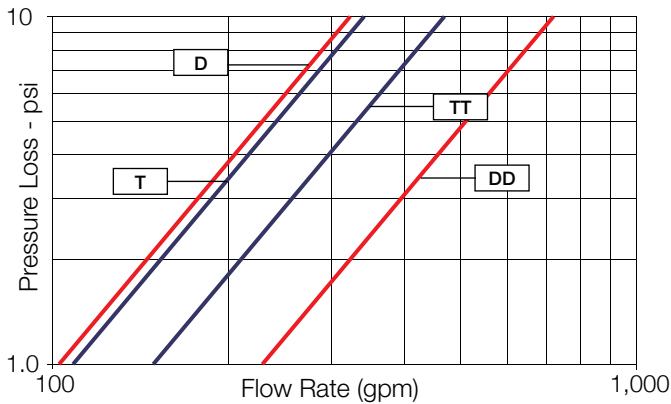


Flow Chart

100 Series, Control Valves "Y" & Angle Patterns



100 Series, Control Valves 3", "T" & Dual Patterns



- T - T model, flow through one side.
- TT - T model, flow through two sides.
- D - Dual model, flow through one side.
- DD - Dual model, flow through two sides.

Flow Properties

Pattern	Y	Y	Y	Y	Y	Angle	Angle	T	TT	D	DD
Size	1½"-2"	2"L	3"	3"L-4"	6"	3"	3"L-4"	3"-4"	3"-4"	3"	3"
Cv	58	116	116	231	462	98	208	110	150	104	231

Valve flow coefficient, Cv $Cv=Q\sqrt{\frac{Gf}{\Delta P}}$

Where:

Cv = Valve flow coefficient (flow in gpm at Diff. Press. 1psi)

Q= Flow rate (gpm)

P= Differential pressure (psi)

Gf= Liquid specific gravity (Water = 1.0)



