



Differential Pressure Sustaining Valve

Model: WW-436

- Pump overload & cavitation protection
- Balancing between circuits in HVAC systems
- Safeguarding pump minimum flow
- Emergency filter by-pass



The Model WW-436 Differential Pressure Sustaining Valve is a hydraulically operated, diaphragm actuated control valve that sustains minimum pre-set, differential pressure between two points regardless of fluctuating flow or varying upstream pressure.

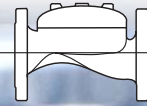
Features and Benefits

- **Line pressure driven** – Independent operation
- **Flexible design** – Easy addition of features
- **Advanced globe or angle hydro-efficient design**
 - Unobstructed flow path
 - Single moving part
 - Non-turbulent flow
 - High flow capacity
- **Fully supported & balanced diaphragm**
 - Low actuation pressure
 - Excellent low flow regulation performance
 - Progressively restrains valve closing
 - Prevents diaphragm distortion
- **In-line serviceable**
 - Easy maintenance
 - Minimal down time

Major Additional Features

- Solenoid control – **WW-436-55**
- High sensitivity pilot – **WW-436-12**
- Electric override – **WW-436-59**
- Electronic Differential Pressure Sustaining valve – **WW-438-03-06**

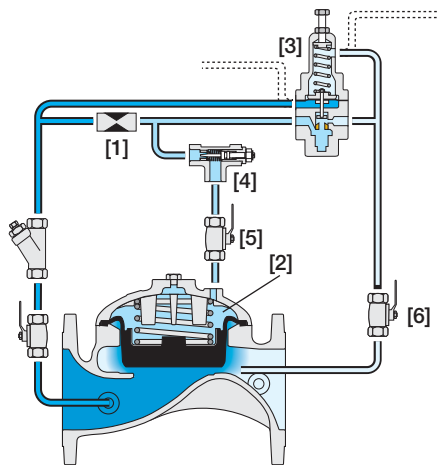
See relevant BERMAD publications.



Operation

The Model WW-436 is a pilot controlled valve equipped with an adjustable, 2-Way differential pressure sustaining pilot. The flow restriction [1] continuously allows flow from valve inlet into the control chamber [2]. The pilot [3], locally or remotely, senses both high pressure below its diaphragm and low pressure above it. Should differential pressure fall below pilot setting, the pilot throttles, enabling pressure to accumulate in the control chamber, causing the main valve to throttle, thereby sustaining differential pressure at the pilot setting. Should differential pressure rise above pilot setting, the pilot releases accumulated pressure causing the main valve to modulate open.

The one-way flow control needle valve [4] stabilizes the valve's reaction by restricting the flow out of the control chamber. Closing cock valve [5] freezes valve opening rate. Downstream cock valve [6] enables manual closing. Pressure sensing is either internal (standard) or external (on request)



Engineer Specifications

The Differential Pressure Sustaining Valve shall sustain minimum pre-set, differential pressure between two points regardless of fluctuating flow or varying upstream pressure.

Main Valve: The valve shall be hydraulically controlled, elastomeric type globe valve with a rolling-diaphragm. The valve shall have an unobstructed flow path with no stem guide or supporting ribs. Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part. The valve shall have a removable cover for quick in-line service enabling all necessary inspection and servicing. Valve pressure rating shall be PN16. Valve construction materials shall be: Epoxy FB coated Ductile Iron body and cover, NR diaphragm & Stainless Steel spring.

The valve shall be supplied as an assembly, hydraulically tested and factory adjusted to customer requirements at an ISO 9000 and 9001 certified hydraulic laboratory.

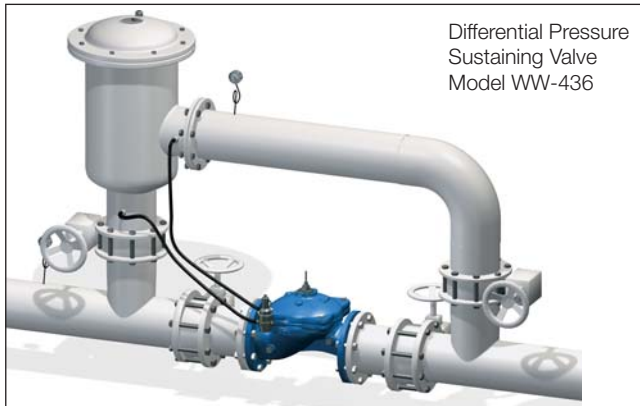
Control System: The valve shall be controlled in a 2-way system without a water bleed to the atmosphere. The control system shall consist of a 2-way adjustable (0.5-6.0 bar), direct acting differential pressure sustaining pilot, isolating cock valves on upstream, downstream, and control chamber ports, a one-way flow control device and a filter. Washing the filter shall not require isolating the main valve. All tubing and fittings shall be Stainless Steel. The assembled valve shall be hydraulically tested and factory adjusted to customer requirements.

Quality Assurance: The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to WRAS, and other recognized standards.



Typical Applications

Filtration Systems



Differential Pressure Sustaining Valve Model WW-436

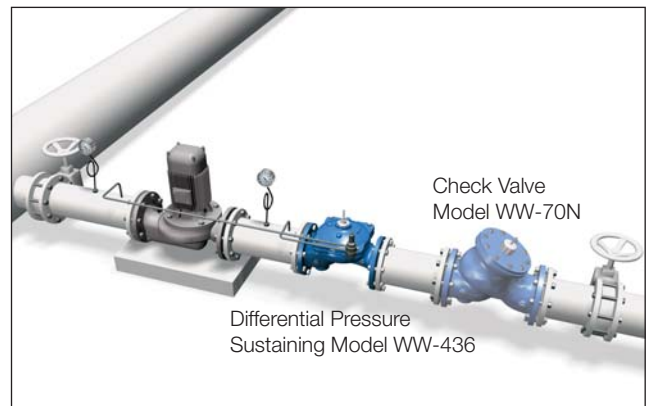
In filtration systems there are two cases when by-passing the filter is essential:

- Blocked filter (potentially causing element collapse)
- Demand for emergency fire water

The Model WW-436, installed as a by-pass, progressively compensates for excessive demand.

Adding feature "S" incorporates alarm signaling attribute.

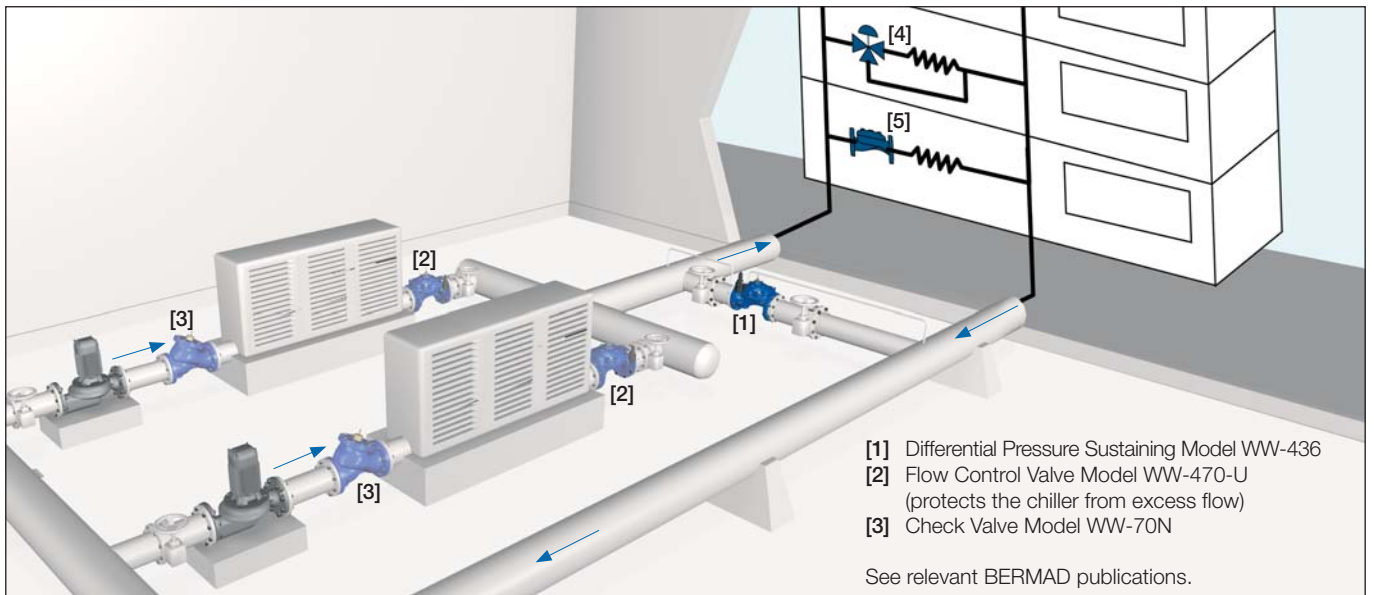
Pump Overload & Cavitation Protection



Check Valve Model WW-70N
Differential Pressure Sustaining Model WW-436

Where suction pressure regimes vary, the Model WW-436 is needed to limit pump flow by sustaining pump differential pressure, preventing pump overload and cavitation damage caused by excessive demand.

Air Conditioning Systems



[1] Differential Pressure Sustaining Model WW-436
[2] Flow Control Valve Model WW-470-U (protects the chiller from excess flow)
[3] Check Valve Model WW-70N

See relevant BERMAD publications.

Air conditioning chillers are sensitive to changes in flow.

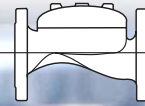
In typical large scale air conditioning systems, two types of valves react to varying consumer demand:

- **Three-way valves [4]** route flow that is in excess of demand through a by-pass.
- **Two-way valves [5]** enable reduced flow or shut off completely.

Chillers in systems that include two-way valves might be subjected to varying flows.

The Model WW-436 [1] functions as a circulation valve to sustain preset differential pressure between distribution and collection lines:

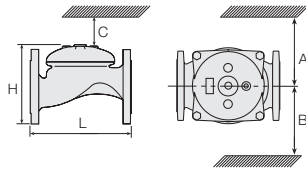
- Safeguarding system minimum flow protecting the chillers from low flow freezing
- Relieving excessive pressure



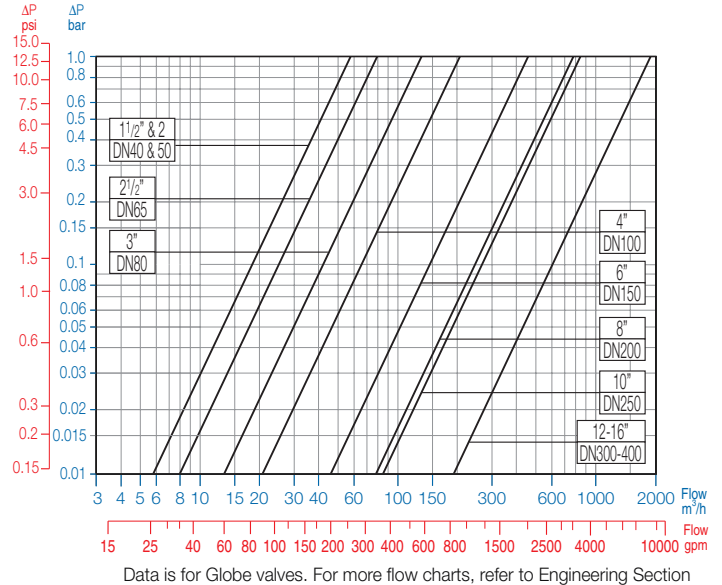
Technical Specifications

Dimensions and Weights

	Size		A, B		C		L		H		Weight	
	DN	inch	DN	inch	DN	inch	DN	inch	DN	inch	kg	lbs
Flange	40	1½	330	13	68	2.7	205	8.1	152	6	8	17.6
	50	2	330	13	68	2.7	205	8.1	155	6.1	9	19.8
	65	2½	340	13	110	4.3	205	8.1	178	7	11	23.1
	80	3	350	14	125	4.9	250	9.8	210	8.3	19	41.9
	100	4	360	14	145	5.7	320	12.6	242	9.5	28	61.7
	150	6	400	16	205	8.1	415	16.3	345	13.6	68	149.9
	200	8	430	17	260	10	500	19.7	430	16.9	125	275.6
	250	10	450	18	275	11	605	23.8	460	18.1	140	308.6
	300	12	515	20	380	15	725	28.5	635	25.0	290	639.3
	350	14	545	22	395	16	742	29.2	655	25.8	358	789.2
400	16	550	22	580	23	742	29.2	695	27.4	377	831.1	
Groove	50	2	310	12	65	2.6	205	8.1	108	4.3	5	11
	80	3	335	13	125	4.9	250	9.8	155	6.1	11	23.4
	100	4	350	14	145	5.7	320	12.6	191	7.5	16	35.7
	150	6	400	16	205	8.1	415	16.3	302	11.9	49	108



Flow Chart



Main valve

- Pressure Ratings:** 16 bar; 232 psi
- Connections Standard:**
- Flanged:** ISO 7005-2 (PN10 & 16); ANSI B16.42 (#150)
- Grooved:** ANSI C606
- Threaded:** Rp ISO 7/1 (BSP.P) or NPT
- Others:** Available on request
- Operating Pressure Range:** 0.5-16 bar; 7-232 psi
- For lower pressure requirements, consult factory
- Working Temperature:** Water up to 50°C (122°F)
- Standard Materials:**
- Body and Cover:** Electrostatic Polyester Powder, RAL 5010 (Blue) Coated Ductile Iron
- Spring:** Stainless Steel 302
- Diaphragm:** Nylon fabric Reinforced NR with rugged insert
- Bolts, Studs and Nuts:** Zinc-Cobalt plated Steel

Control System

- Pilot Setting Range:** 0.5-6 bar; 7-90 psi
- Setting ranges vary according to specific pilot spring. Please consult factory.
- Pilot Standard Materials:**
- Body:** Bronze or Stainless Steel
- Elastomers:** NBR
- Springs:** Galvanized Steel or Stainless Steel
- Internals:** Stainless Steel
- Control Accessories:** Bronze, Brass, Stainless Steel & NBR
- Tubing and Fittings:** Stainless Steel

How to Order

Please specify the requested valve in the following sequence: (for more options, refer to Ordering Guide.)

Sector	Size	Primary Feature	Additional Feature	Pattern	Body Materials	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additional Attributes	
WW	6"	436	00	G	C	16	EB	-	NN	I	
Waterworks	1½ - 16" DN40-400	Differential Pressure Sustaining	Globe Angle (up to 4°)	G A	Ductile Iron (Standard) Cast Steel St. Steel 316 Nickel Alumin. Bronze C S N U	Epoxy FB Blue Polyester Green Polyester Blue Uncoated	EB PG PB UC	St. St. 316 Tubing & Fittings Copper Tubing & Brass Fittings Plastic Tubing & Brass Fittings	NN CB PB	I F S Q N 6	
No Additional Feature			00	ISO-16	16	24VAC/50Hz - N.C. 24VAC/50Hz - N.O. 24VDC - N.C. 24VDC - N.O. 24VDC - L.P. 220VAC/50Hz - N.C. 220VAC/50Hz - N.O.	4AC 4AO 4DC 4DO 4DP 2AC 2AO	Valve Position Indicator Large Control Filter Electric Limit Switch Valve Position Transmitter St. St. 316 Control Accessories Pressure Gauge	I F S Q N 6	Use when additional electric control feature is selected	Multiple choices permitted
High sensitivity pilot			12	ANSI-150	A5						
Multi-Setting Levels - Electrically Selected			45	JIS-10	J1						
Closing Surge Prevention			49	Grooved (2-6")	VI						
Solenoid Controlled			55	BSP.P (1½-3")	BP						
Electric Override			59	NPT (1½-3")	NP						
Multiple choices permitted				Other end connections available on request							

