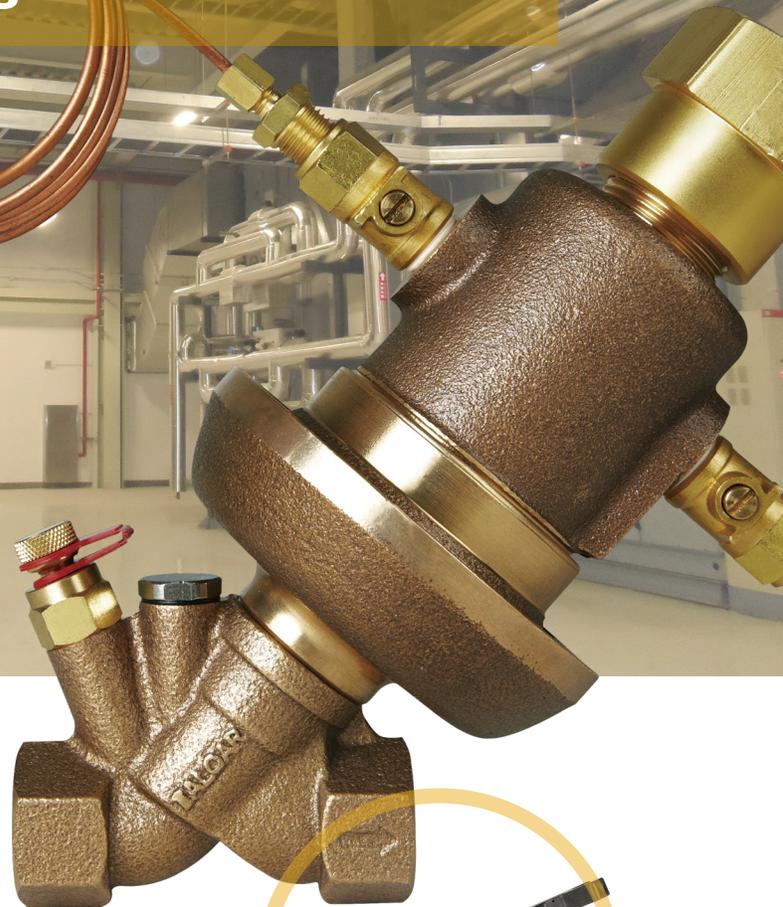


Differential Pressure Control Valves

Solutions to Constant
Differential Pressure
in Variable Flow Systems



Global Flow Control Combination



TALOAR[®]

Taloor Changzhou
FLUID SYSTEMS, 2023

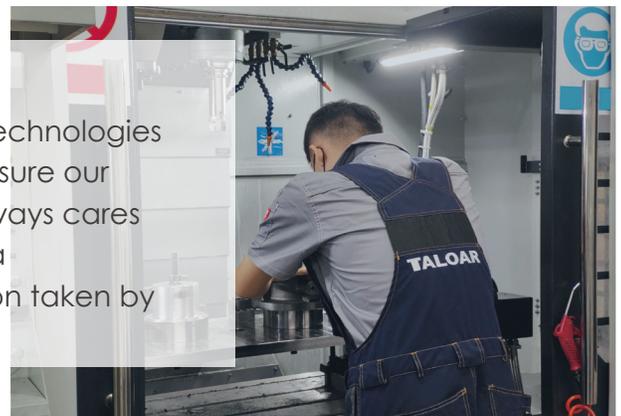
Precise differential pressure system control technology



TALOAR Global Flow Control Combination

Taloor is a world-leading supplier of flow control products and services, providing a diverse range of fluid control products that has wide applicability to commerce, water service and industry. Taloor products cover a comprehensive line of general manual valves, fire valves, hydraulic control valves, balance valves, electric control valves, as well as industrial ball valves, butterfly valves, instrument valves, and so on, some of which have been recognized by the world's most authoritative UL, FM, and CE approvals. Today, Taloor can provide more than 12,000 kinds of products that demonstrate outstanding performance to protect customer's operating systems against any potential security threats, whether in extreme temperature conditions at low or high temperatures and whether operated manually or automatically, so that we can ensure the operating system security.

Taloor combines the latest mechanical technologies and advanced automation systems in its production to ensure our products consistently maintain excellent quality. Taloor always cares and concerns for our users, which is not just a slogan, but a fundamental aspect ingrained in every decision and action taken by the company.



Concept of differential pressure control valves

In HVAC systems, especially in the variable flow systems, when the system operating condition changes, the pressure differential between both ends of the control valve or pipe end device will change accordingly. If the pressure differential between both ends of the control valve or hydraulic loop is too large, this will cause a series of problems, such as degradation in control accuracy and loud noise of control valve, or worst, failure to close the control valve, system failure, etc.



Application of differential pressure valves

The differential pressure control valve is a balance valve which automatically keeps the differential pressure constant. It works to keep differential pressure between the supply and return ends of the control valve or pipe end device constant. Avoiding the hydraulic interference caused by the change in differential pressure of the piping network. When used with the manual-regulated balance valve, it can be used for flow measurement.

Dynamic balancing in a variable flow system with loads from 0% to 100%, by utilizing the change in pressure within the control system to keep the system balance. This helps save energy, enhance system efficiency, greatly improve comfort and control accuracy. The differential pressure control valves are used for the dynamic hydraulic balance of HVAC systems, to eliminate the time-consuming regulating processes.

Function Introduction

I Control Flow

The differential pressure control valve can be connected with an regulating valve at pipe end to achieve flow control, prevent water shortage at the end of the system, improve the pump working efficiency and save energy.

I Reduce Noise

The differential pressure control valve can maintain the differential pressure between the inlet and outlet of the control valve to avoid excessive differential pressure under partial loading conditions which will generate noise.

I Make Hydraulic Balance Commissioning Simpler

The differential pressure control valve can act as an independent and non-interfering water system module by coordinating with the piping networks. To control the flow of each system module, it is only needed to perform the commissioning once, which simplifies the hydraulic balance process, improves the differential pressure control precision, and greatly reduces the cost and time for hydraulic balance commissioning.

I Allow Regional Balance

The differential pressure control valve can set each pipe network system as an independent sectional module to be assembled into the main system. It is not needed to launch the hydraulic balancing commissioning again whenever there is expansion or a change in design in the main system.

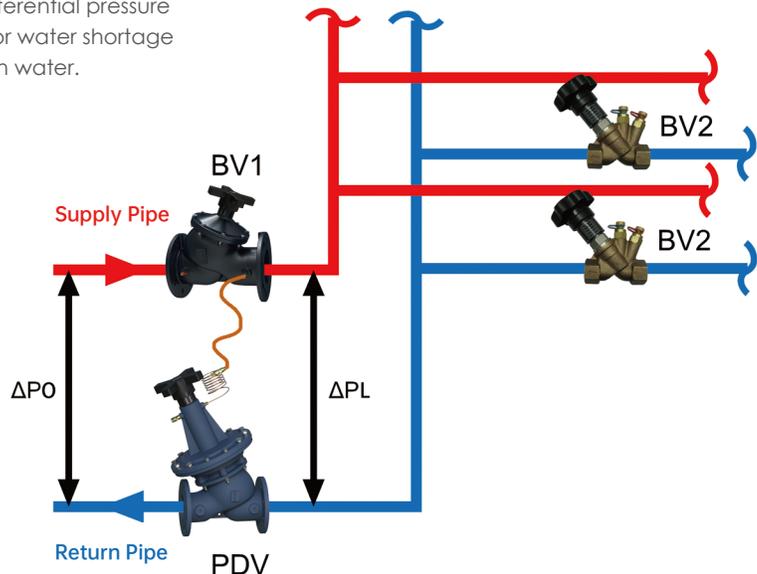
I Keep Differential Pressure Between Both Ends of Control Valve Constant

The differential pressure control valve when used with electric-driven valve together, helps keep the differential pressure between both ends of the control valve constant, improve the control valve authority, and make the control valve more accurate and stable.



Typical Applications

- The differential pressure control valve when used with the balance valve can stabilize the differential pressure between the water supply and return ends, eliminate the interference of pressure change in the system. Keeps the differential pressure between the balance valve and differential pressure control valve within a stable range, ensure no overflow or water shortage occurs to the balance valve at downstream of the return water.
- The differential pressure control valve can be treated as a system module. When any modules are added to or removed from the main system, no need to carry out hydraulic balance commissioning again for the entire system.
- The differential pressure control valve PDV adjusts the differential pressure ΔPO of the main system to a more stable and suitable pressure differential ΔPL .
- The balance valve BV1 is used for flow measurement and shut-off for maintenance, connected with capillary of the differential pressure control valve PDV.
- The balance valve BV2 at downstream of the return water, Set Kv value controls the flow of each loop.



Differential Pressure Control Valves

PN25/ 350PSI

PC320 bronze differential pressure control valve, designed with a low-resistance Y-shaped structure, provides more accurate and stable control in the variable flow system, automatically and keeps the differential pressure between both ends of the control valve at a relatively stable value, with no external power source needed. The high-precision disc and reliable sealing performance ensures precision and durability in flow measurement. PC320 is mainly used in the HVAC system.



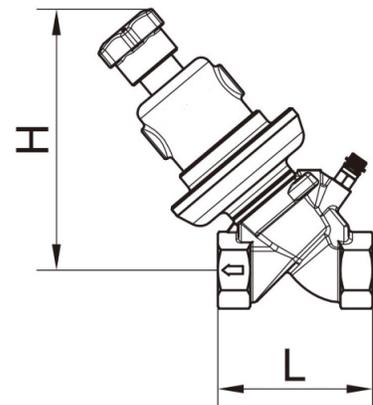
PC320
¾" ~ 2"

Product Features

- Relying on the pressure change of the high/low pressure chambers to change the valve opening angle, automatically keeping differential pressure constant.
- Large controllable pressure differential range.
- Valve shut-off function.
- differential Pressure value can set at site.
- Pressure measuring connections on both side.
- Vent hole in high pressure chamber.
- Lower noise.

Technical Parameters

Pressure Grade: PN25/350PSI
Working Temperature: -10°C~120°C
Size: ¾" - 2" , DN20 mm-DN50 mm
End Type: BSPT or NPT threads
Medium: Water
Max. Kpa: ≥250



Material Specifications

Body: Bronze
Bonnet: Bronze
Disc: Copper alloy
Seat: Bronze
Seal Ring: EPDM
Diaphragm: EPDM
Spring: SUS304
Stem: SUS304
Hand Wheel: Brass
Guide Piping: Brass
Guide Piping Size: 2 m (1/8")

Dimensions/Weights

mm	20	25	32	40	50
In	¾	1	1¼	1½	2
L	84	96	110	120	150
H	175	185	195	202	208
W	102	102	122	122	122
Lbs	7.3	7.7	10.6	11.7	13.7
kg	3.3	3.5	4.8	5.3	6.2

* In valve installation, it is strongly suggested that sufficient space should be left for easy maintenance in the future. A strainer shall be mounted in front of the valve to prevent foreign matters from blocking the valve.

Differential Pressure Control Valves

PN16/235PSI, PN25/350PSI

PC1000 ductile Iron differential pressure control valve, designed with a low-resistance Y-shaped structure, provides more accurate and stable control in the variable flow system, automatically and keeps the differential pressure between both ends of the control valve at a relatively stable value, with no external power source needed. The high-precision disc and reliable sealing performance ensures precision and durability in flow measurement. PC1000 is mainly used in the HVAC system.



Product Features

- Relying on the pressure change of the high/low pressure chambers to change the valve opening angle, automatically keeping differential pressure constant.
- Low-resistance Y-shaped structure.
- Large controllable differential pressure range.
- Differential pressure value can set at site.
- Memory limit function.
- Vent hole in High Pressure chamber.
- Lower noise.

PC1000

2½" ~ 10"

Technical Parameters

Pressure Grade: PN16,PN25

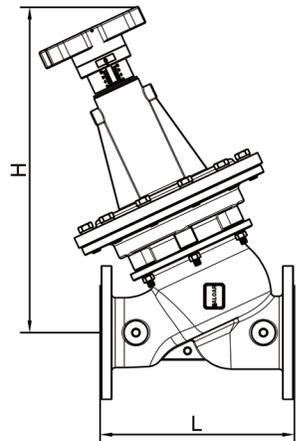
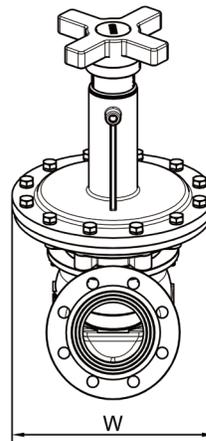
Working Temperature: -10°C~120°C

Size: 2½" - 10" , DN65 mm-DN250 mm

End Type: ANSI or BSEN flanges

Medium: Water

Max. Kpa: ≥400



Material Specifications

Body: Ductile iron

Bonnet: Ductile iron

Disc: Stainless steel

Seal Ring: EPDM

Diaphragm: EPDM

Spring: SUS304

Stem: SUS304

Hand Wheel: 2 ½" ~ 4" Nylon

5" and above ductile iron

Guide Piping: Brass

Guide Piping Size: 2 m (1/8")

Dimensions/Weights

mm	65	80	100	125	150	200	250
In	2½	3	4	5	6	8	10
L	229	250	320	370	415	500	605
H	446	478	536	583	659	760	820
W	250	279	333	410	511	530	535
Lbs	62	77	110	163	254	353	507
kg	28	35	50	74	115	160	230

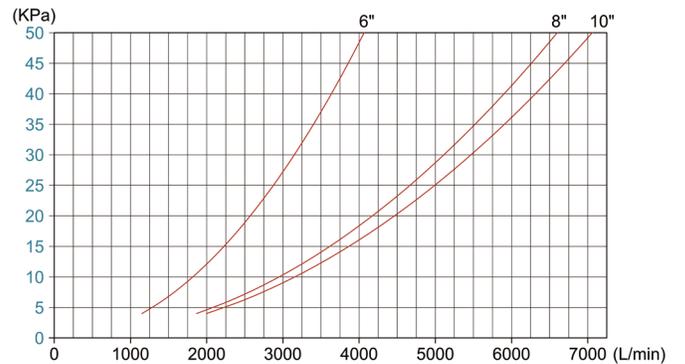
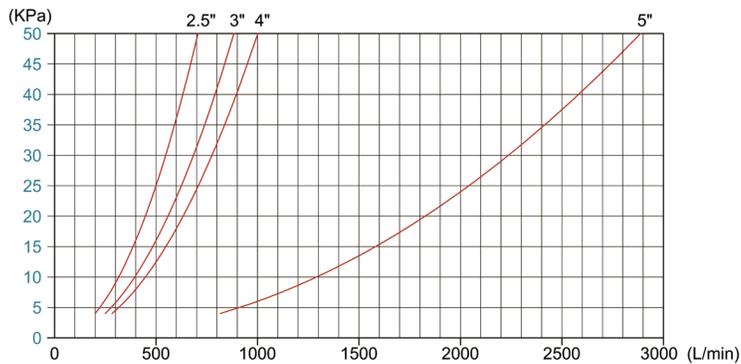
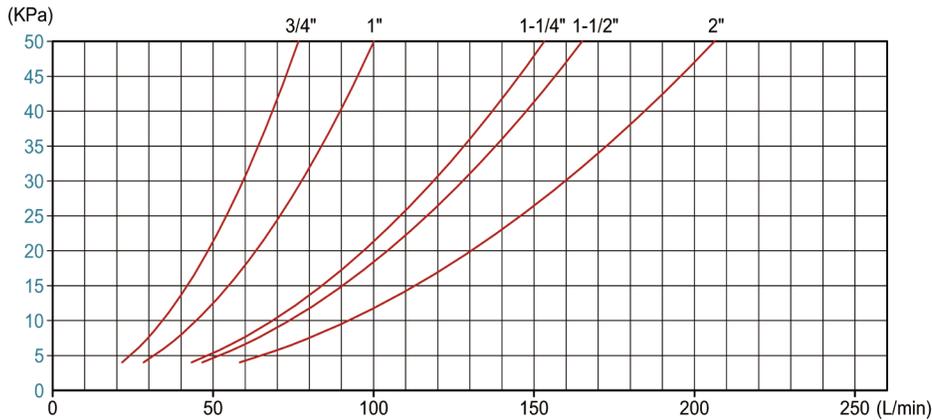
* In valve installation, it is strongly suggested that sufficient space should be left for easy maintenance in the future. A strainer shall be mounted in front of the valve to prevent foreign matters from blocking the valve.

Differential Pressure Control Range

Size/Inch	Differential Pressure Control Range (Kpa)	Working Differential Pressure Range (Kpa)	KVs value
3/4	25-80	10-250	5
1			8.5
1 1/4			13
1 1/2			14
2			17.5
2 1/2	40-80	10-350	60
3			75
4			85
2 1/2	60		
3	75		
4	85		
5	245		
5	245		
6	345		
8	580		
6	40-80	10-400	345
8			580
10			599

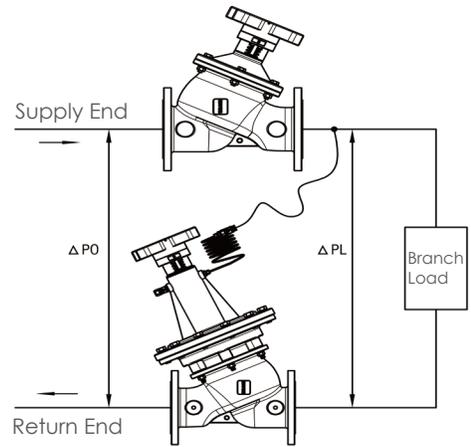
Performance Curve

The following diagrams show the minimum differential pressure required by the differential pressure control valve in its operating range under different flow rates.



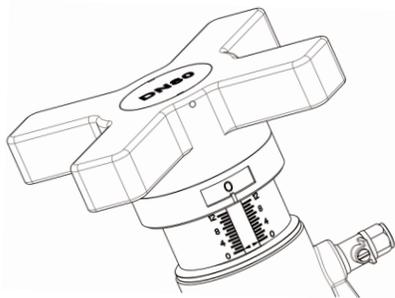
Recommendations on Installation

1. The valves are designed with multiple external copper parts, please handle with care during transportation or installation to prevent the valves failing to operate due to damage in the pipes. Large-sized valves are designed with lifting screw holes (2½"-10" valves designed with two M12 screw holes on their shells).
2. All valve bodies are casted with flow direction arrows. During installation, please ensure the medium flow directions in pipeline systems are consistent with the directions of the arrows.
3. Each valve is affixed with a parameter nameplate to indicate the adjustable differential pressure range which should be consistent with the system differential pressure control valve.
4. It is needed to reserve sufficient space at installation to facilitate future adjustment, setting and maintenance. A straight pipe should have the length at least 5 times the pipe diameter needed in front of the valve, and a straight pipe should have the length at least 2 times the pipe diameter needed behind the valve. After valve installation, check to ensure that the ball valve in the pipe line is opened, and that the ball valve for venting is closed.
5. The installation and piping of the valve shall comply with the principle shown in the diagram on the right. ΔPO is branch external differential pressure and ΔPL is branch load differential pressure.

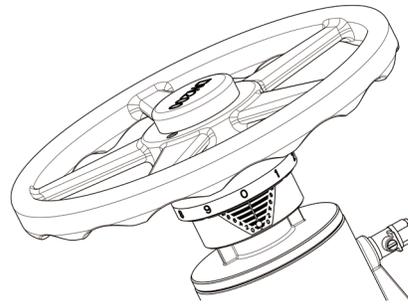


Commissioning Method

1. Before delivery, each valve is set at the initial value of each adjustable differential pressure range. For example, 4" valves have two adjustable differential pressure ranges, i.e. 40-80 Kpa and 80-150 Kpa. So, before delivery, they will be set at 40 Kpa or 80 Kpa.
2. The hand wheel on the top is used to adjust the differential pressure of the valve. At the scale of 0, the spring is in the loose state, the differential pressure is the lowest; turning counterclockwise is to tighten the spring to increase the control in differential pressure.
3. Different valves sizes vary with different adjustable pressure ranges. The differential pressure can be adjusted by the turn of the hand wheel as shown in the following table. For other parameters, please contact factory.



2½" ~ 4"



5" ~ 10"

Size In	2½"		3"		4"		5"		6"		8"		10"	
Turns	40-80 Kpa	80-150 Kpa	40-110 Kpa	85-165 Kpa	20-80 Kpa	70-160 Kpa	45-85 Kpa	30-150 Kpa	20-85 Kpa	70-155 Kpa	30-110 Kpa	80-200 Kpa	20-110 Kpa	80-200 Kpa
0	40	80	40	85	20	70	45	30	20	70	30	80	20	80
1	44	87	47.8	98.3	26	79	55	45	28	80.5	40	95	31.3	95
2	48	94	55.6	111.6	32	88	65	60	36	91	50	110	42.6	110
3	52	101	63.4	124.9	38	97	75	75	44	101.5	60	125	53.9	125
4	56	108	71.2	138.2	44	106	85	90	52	112	70	140	65.2	140
5	60	115	79	151.5	50	115		105	60	122.5	80	155	76.5	155
6	64	122	86.8	164.8	56	124		120	68	133	90	170	87.8	170
7	68	129	94.6		62	133		135	76	143.5	100	185	99.1	185
8	72	136	102.4		68	142		150	84	154	110	200	110.4	200
9	76	143	110.2		74	151								
10	80	150			80	160								

Note: "Turns" in the above table refers to the number of turns the hand wheel is turned counterclockwise. 0 means the valve is in its initial state.



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