FlowCon PIM™-DP

Flanged Adjustable Differential Pressure Control Valve
65-150 mm / 2 1/2”-6”

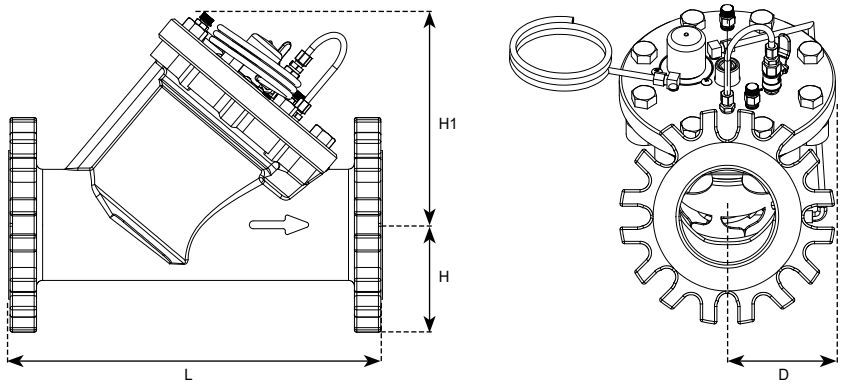
SPECIFICATIONS

Static pressure:	1600 kPa / 240 psi
Media temperature:	-20ºC to +120ºC / -4ºF to +250ºF
Material:	
- Housing:	Ductile iron ASTM A395, 60-40-18
- Insert:	AISI type 304 stainless steel
- O-rings:	EPDM
- Diaphragm:	EPDM
Maximum close off pressure:	800 kPa / 120 psi
Maximum operational ΔP:	400 kPaD / 58 psid
Controlled ΔP:	25-170 kPaD / 4-25 psid
Flow rate range:	2270-119000 l/hr / 9.99-524 GPM
End connections:	Universal flange connections which can be used with both ISO and ANSI flanges. Mounting kits are not supplied by FlowCon
Capillary tube:	Ø6 mm (Ø1/4”), length: 1.5 meter (5 ft), copper
Housing taps:	1/4” NPT

DIMENSIONS AND WEIGHT (NOMINAL)

Model no.	Valve size mm (in)	L mm (in)	H mm (in)	H1 mm (in)	D mm (in)	Weight kg (lb)	Kv/Cv[1] m^3/hr (GPM)
PIMDP.0.J	65 (2 1/2) 80 (3)	262 (10.3)	94.4 (3.72)	166 (6.54)	94.5 (3.72)	13.6 (30.0)	69 (80)
PIMDP.0.K	100 (4)	395 (15.6)	114 (4.49)	225 (8.86)	114 (4.49)	34.5 (76.0)	120 (140)
PIMDP.0.L	125 (5) 150 (6)	466 (18.3)	139 (5.47)	285 (11.2)	141 (5.55)	49.0 (108)	258 (300)

Note 1: To determine flowrate at a specific kPaD the Kv calculation can be used. $Q=Kv^*\sqrt{\Delta P}$.



MODEL NUMBER SELECTION

PIMDP.0.____ . F . T

Insert valve size
J=50/65/80mm, 2-3" **K**=100mm, 4" **L**=125/150mm, 5-6"

F=Double flange connection

T=Optional 3"x3" Aluminium hanging ID tag

Example: PIMDP.0.J.F.T=FlowCon PIM™-DP 65/80mm (2 1/2-3") with double flange connection and aluminium hanging tag.

FLANGE MATCH

Model no.	Flange size (inch)	ASME B16.5 weld neck flanges		Flange size (mm)	EN1092-1 weld neck flanges			
		Class 150	Class 300		PN10	PN16	PN25	PN40
PIMDP.0.J	2 1/2		✓	65	(✓)	(✓)	(✓)	(✓)
	3	✓	✓	80	✓	✓	✓	✓
PIMDP.0.K	4	✓	✓	100	✓	✓	✓	✓
PIMDP.0.L	5		✓	125				✓
	6	✓		150	✓	✓	✓	✓

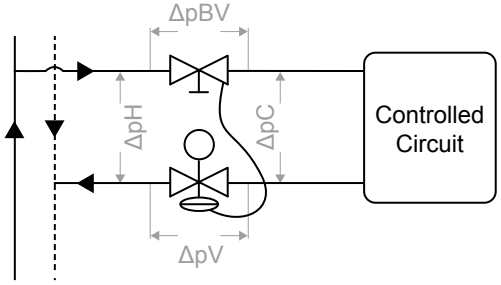
DESCRIPTION

The FlowCon PIM™-DP series is a range of externally adjustable flanged differential pressure control valves. The purpose of the valve is to keep a constant differential pressure and thereby avoid noise from the sub-system, which the valve is controlling. Further, the FlowCon PIM™-DP can be used as shut off valve.
Setting of the specific ΔP required over the controlled sub-system is externally operated and can easily be adjusted even when the valve is installed and in operation. Adjustment is done with a 13 mm (1/2") Allen key turning the setting on the valve cap slowly (approximately one turn every 10 seconds).

Flow range, l/hr (GPM)		
PIMDP.0.J	Qmin	2270 (9.99)
	Qmax	32950 (145)
PIMDP.0.K	Qmin	13600 (59.9)
	Qmax	82900 (365)
PIMDP.0.L	Qmin	18200 (80.1)
	Qmax	119000 (524)

HOW TO SELECT

The FlowCon PIM™-DP valve is to be selected based on the calculated differential pressure across the controlled circuit (ΔpC) at design flow.
The installed FlowCon PIM™-DP will hereafter ensure ΔpC never exceeds the valve set kPaD + tolerance even at partial load conditions down to the minimum flow values listed.



ΔpC = Controlled Δp Circuit
ΔpV = Δp across FlowCon PIM™-DP
ΔpBV = Δp across Partner Valve
ΔpH = Δp Pump Head

Example;
Design flow = 50000 l/hr = 50 m^3/hr (220 GPM)
Pipe size = DN100 (4")
ΔpC = 25 kPaD (3.63 psid)

❶ **Select valves** (partner valve and DPCV) based on line size and system requirements to eliminate pipe modifications.
In this example it will be FlowCon Partner Globe and FlowCon PIM™-DP. With PIMDP.0.K's maximum flow of 82.9 m^3/hr, this valve size matches both size and flow requirements.

❷ **Set FlowCon PIM™-DP** to required (calculated) ΔpC at design flow by slowly turning the setting (+ or -) while measuring ΔpC over the p/t plugs - see instruction for more details.
FlowCon PIM™-DP will hereafter ensure that ΔpC never exceeds the set 25 kPaD (3.63 psid) + tolerance in the specified flow range. Note that the maximum flow value is to be limited on the partner valve.

❸ **Calculate ΔpV_{MIN}** using the standard formula $\Delta pV_{MIN} = (Q_{design} / Kvs)^2 * 100$
In this case $\Delta pV_{MIN} = (50\ m^3/hr / 120\ m^3/hr)^2 * 100 = 17.4$ kPaD (2.52 psid).

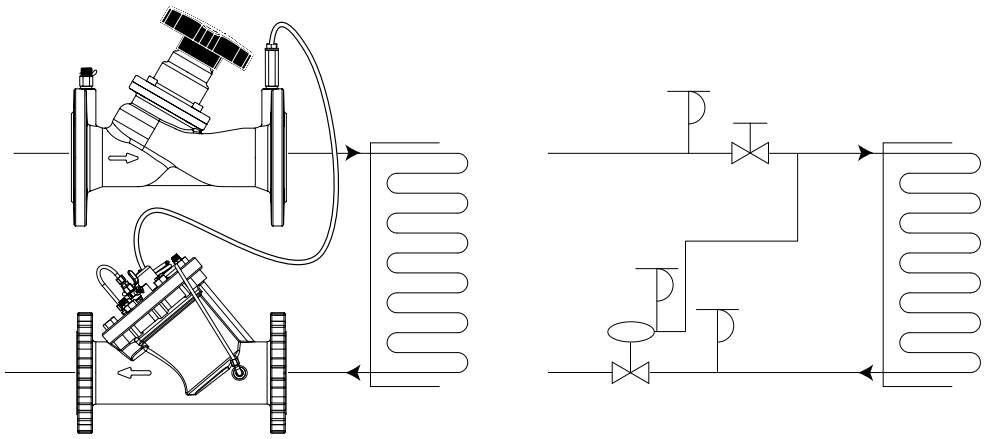
❹ **Select Partner Valve -** preferably a balancing valve - and determine the ΔpBV. In this case a FlowCon Partner Globe is selected. From its specification, ΔpBV is at a flow rate of 50 m^3/hr in setting 6 read to be 14 kPaD (2.03 psid).

❺ **Determine minimum pump head:**
$\Delta pH = \Delta pBV + \Delta pC + \Delta pV_{MIN} = 14 + 25 + 17.4 = 56.4$ kPaD (8.18 psid)
The pump can now be selected considering a pressure drop of 60 kPaD (8.7 psid).

ACCESSORIES

- F212: Capillary tube with fitting and adaptor for connection to FlowCon Partner Globe
- F4039-11: Straight fitting, 1/4” NPT
- F4039-14: Elbow fitting, 1/4” NPT
- ACC6584: 1/4” NPT to 1/4” ISO adaptor for connection to FlowCon standard body taps
- F4039-19: Tee, 1/4” NPT
- F6889: Pressure/temperature plug, 1/4” NPT
- F9645-074: FlowCon PIM™-DP flow restrictor
- F9645-075: FlowCon PIM™-DP filter.

APPLICATION AND SCHEMATIC EXAMPLE



GENERAL SPECIFICATIONS

1. DIFFERENTIAL PRESSURE CONTROL VALVES - FLOWCON PIM™-DP

1.1. Contractor shall install the differential pressure control valves where indicated in drawings.
1.2. Valve shall be a mechanically operated, differential pressure control device, which shall accurately control differential pressure over a sub-system independent of system pressure fluctuations.
1.3. Valve shall be able to function as a shut off valve.
1.4. Valve shall be serviceable by replacing/cleaning filter in the adjustment tube.

2. VALVE HOUSING

2.1. Housing shall consist of ductile iron ASTM A395 Grade 60-40-18, rated at no less than 1600 kPa (240 psi) static pressure and +120°C (+248°F).
2.2. Housing shall be permanently marked to show direction of flow.
2.3. Housing shall be for installation between flanges.
2.4. Dual pressure/temperature test plugs for verifying accuracy of performance shall be standard on all valve sizes.

3. PRESSURE REGULATION UNIT

3.1. Regulation unit shall consist of stainless steel.
3.2. Regulation diaphragm must be an EPDM in-line rolling diaphragm. Flat diaphragm or external disc regulation are not accepted.
3.3. Regulation unit shall be externally adjustable with the valve in-line and the system in operation.
3.4. Regulation unit shall allow differential pressure adjustment within 25-170 kPaD (4-25 psid).
3.5. Regulation unit must protect the system against noise and must have a clearly defined differential pressure range within a flow range of 2270-32900 l/hr (9.99-145 GPM) for DN65/80 (2 1/2”-3”), 13600-82900 l/hr (59.9-365 GPM) for DN100 (4”) and 18200-119000 l/hr (80.1-524 GPM) for DN125/150 (5-6”).

UPDATES

For latest updates please see www.flowcon.com