Differential pressure control valve DN65-DN250

Differential pressure control valve (DPCV) can keep the differential pressure at two sides of load constant, that can improve the stability and accuracy, reduce the noise, and it's easy to balance and commission.

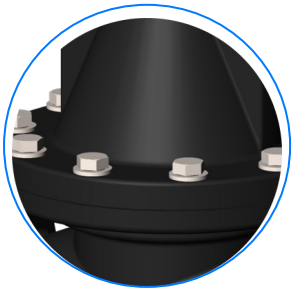
Product Features

◆ Digital Handwheel

The DP can be set by rotating the handwheel and the number on handwheel can show the cycles which is easy for operation and convenient for debugging and recording.

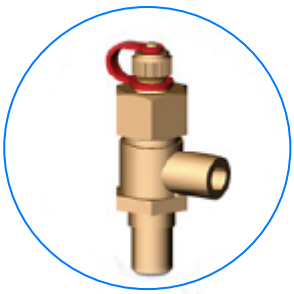
◆ Build-in Diaphragm Capsule

The valve adopts the build-in diaphragm capsule which could make the valve smaller and significantly avoid damaging during installation.



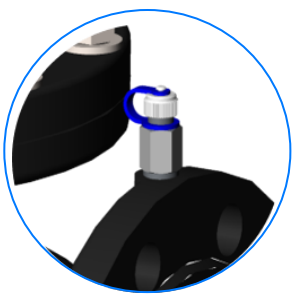
◆ 3-port Test Plug with Close-off Function

Closing the test plug can avoid the tube from blocking during washing pipes. During normal use, keep the test plug open so as to achieve the balancing function of the valve.



◆ Stainless Steel Test Plug

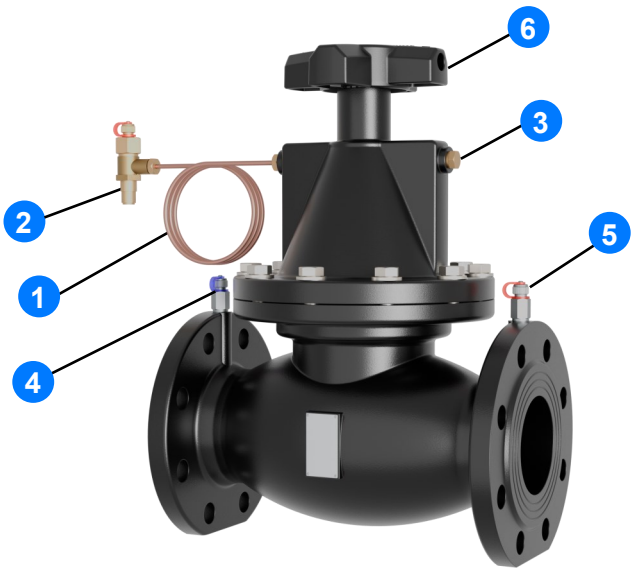
There are stainless steel higher/lower test plugs on the valve body. which have higher strength and not easy to be damaged.



Type Overview

Type PN16	Type PN25	ΔPset	Caliber [in.]	DN [mm]	Kvs [m^3/h]
HYF65-2VGC-80	HYF65-2VGD-80	20-80kPa	2-1/2"	65	57
HYF65-2VGC-160	HYF65-2VGD-160	40-160kPa	2-1/2"	65	57
HYF80-2VGC-80	HYF80-2VGD-80	20-80kPa	3"	80	75
HYF80-2VGC-160	HYF80-2VGD-160	40-160kPa	3"	80	75
HYF100-2VGC-80	HYF100-2VGD-80	20-80kPa	4"	100	115
HYF100-2VGC-160	HYF100-2VGD-160	40-160kPa	4"	100	115
HYF125-2VGC-80	HYF125-2VGD-80	20-80kPa	5"	125	167
HYF125-2VGC-160	HYF125-2VGD-160	40-160kPa	5"	125	167
HYF150-2VGC-80	HYF150-2VGD-80	20-80kPa	6"	150	196
HYF150-2VGC-160	HYF150-2VGD-160	40-160kPa	6"	150	196
HYF200-2VGC-80	HYF200-2VGD-80	20-80kPa	8"	200	290
HYF200-2VGC-160	HYF200-2VGD-160	40-160kPa	8"	200	290
HYF250-2VGC-80	HYF250-2VGD-80	20-80kPa	10"	250	430
HYF250-2VGC-160	HYF250-2VGD-160	40-160kPa	10"	250	430

Operating Instructions



Description of spare parts number: (1) Capillary pipe (2) 3-port test plug (3) Air hole plug (4) (5) test plugs (6) Hand-wheel

The 1st step: Connect capillary pipe (1). As shown on the left, one end of capillary pipe connects DPCV, the other end connects low end of Static balancing valve through the 3-port test plug (2), at this time, system should be in a state of low pressure.

The 2nd step: Open the valve air hole plug (2), then open the 3-port test plug (2), until there is water flow out, lock the air hole plug after all the air in the valve body is discharged.

The 3rd step: As shown on the left, use a digital DP meter to measure the DP on both P2, P3 ends, that is ΔPset.

The 4th step: Set ΔPset, the DP can be set by rotating the handwheel(6), accurately adjust can be made according to the data of digital DP meter.

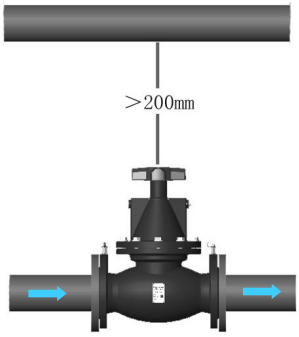
Test plugs(4) (5): Remove the cover and insert probe into self-sealing test plugs, (4) is the High Pressure End, (5) is the Low Pressure End.
Capillary pipe (1): the factory default length is 1m, if longer one is needed, 2m capillary pipe is optional.

Attention! Must use matched capillary pipe.

Installation Instructions

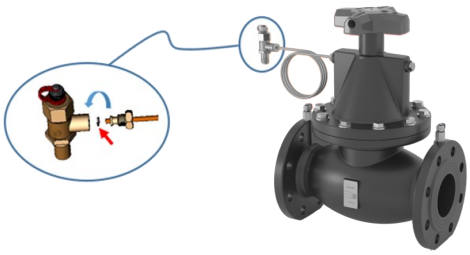
Note:

1. DPCV must be installed on the return pipe.
2. Pay attention to the medium flow direction, which is complied with the flow mark on the valve body!
3. Valve installation should be reserved enough space, it's easy to debug and maintenance.

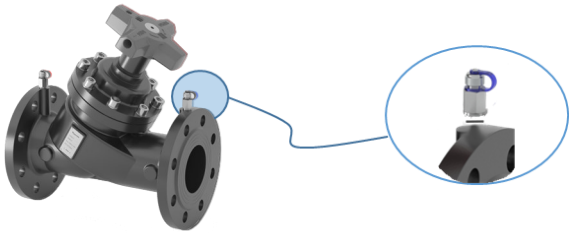


- When there is a static balance valve in the system, the 3-port test plug is connected to the low pressure end of the static balancing valve (i.e. replacing the blue test plug on the static balance valve). The installation steps are as follows:

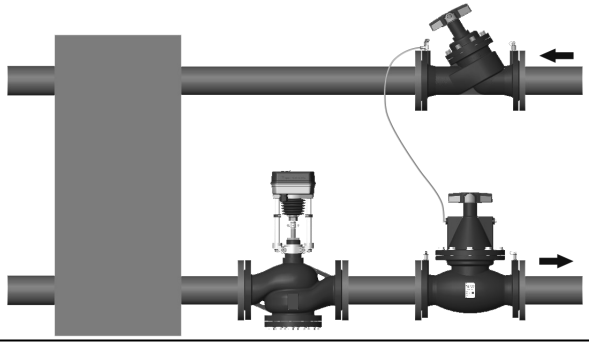
1. Use the S14 wrench to remove the 3-port test plug, don't discard the sealing ring at the red arrow!



2. Use the S14 wrench to remove the blue test plug at the low pressure end of the static balancing valve.

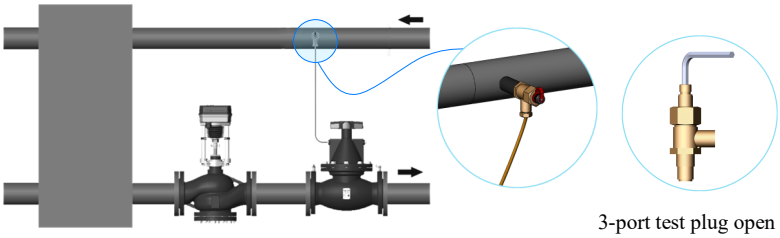


3. Open the 3-port test plug of DPCV and screw it into the low pressure end of the static balancing valve. After the 3-port test plug is installed, tighten it and capillary pipe; Note that the sealing ring should be put back in place!



- If there is no static balancing valve in the system, the 3-port test plug should be directly connected to the pipe through the weld tube. The installation steps are as follows:

Make a hole of φ20 in the pipeline, and weld the tube on the pipeline; then screw the 3-port test plug into the weld tube and tighten it with the capillary pipe. Finally, open the 3-port test plug.



3-port test plug open

Note:

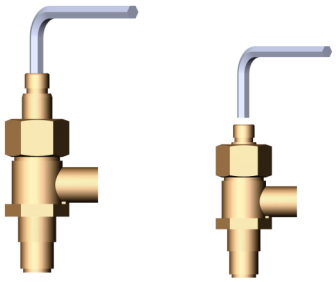
1. The 3-port test plug can't be welded directly on the pipe, high temperature will damage the internal parts during welding, welding tube and pipe must be welded first, then connect the 3-port test plug.
2. The pressure hole should be taken from the horizontal side of the pipeline center line, and shouldn't be placed at the upper or lower end of the pipeline. The upper end installation may lead to the inaccurate pressure taking if pipeline is not full flow, the lower end installation may cause the pressure pipe is blocked by dirt.

Debugging Instruction

Note:

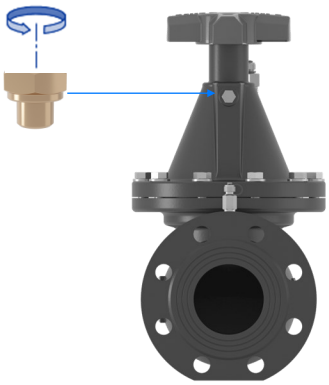
1. Check whether the valve is in a fully open state before the water and pressure test of the pipeline， you can use a hexagonal wrench to counterclockwise tighten it and the valve is fully open. Usually the factory default state is fully open.
2. Make sure that the 3-port test plug is installed on the low pressure end of the static balancing valve and it is in the open state. See Step 1 for details!
3. Rotate the handwheel counterclockwise to the Max. DP set value to prevent the valve closed when the pressure is too high during pressure test
4. Exhaust all the air in the valve body before debugging. See Step 2 for details!

1. Before debugging, open the 3-port test plug, turn the Allen wrench (5mm) counterclockwise to open it.

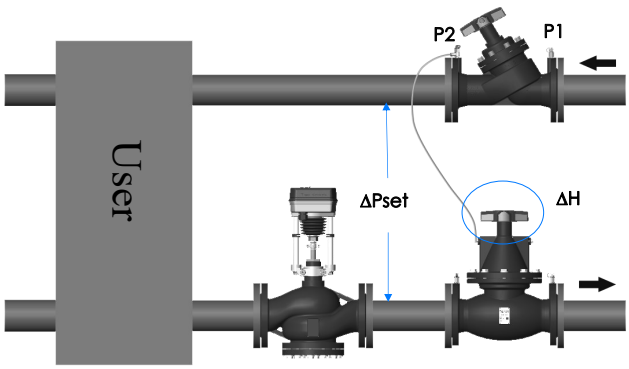


3-port test plug open　　3-port test plug closed

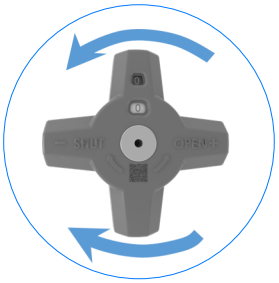
2. Water exhaust: open the plug of valve air hole until a continuous water column is discharged, the exhaust is finished and close the plug.



3. Use the hydraulic debugging instrument to measure the DP between P2 and P3, insert the measuring probe into the test plugs of the DPCV, rotate the handwheel, observe the DP on the instrument, and adjust the set DP; When Δ H > 2 * Δ Pset, DPCV starts to work.

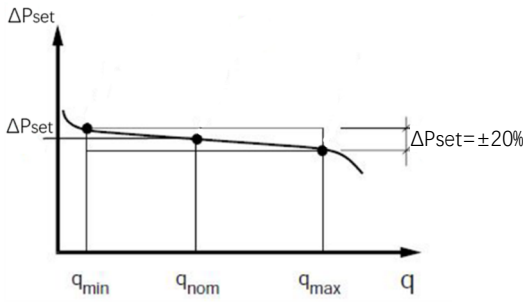


Counterclockwise, increase the set DP



Clockwise, decrease the set DP

Working Range



Type Selection

1. Select the desired ΔPset from the tables.
2. Select the same size of the valve as the pipe.
3. Check the desired flow is smaller than the specified q_{max}, if not, select the most similar large dimension, or a larger ΔPset
   The table work in the following situation:
   ΔH≥2xΔPset, the valve will work effectively from 2xΔPset to 350kPa+ΔPset

ΔPset: 20~80kPa

$q_{min}/q_{nom}/q_{max}(m^3/h)$

ΔPset	20 kPa			30 kPa			40 kPa			50 kPa		
DN	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	0.64	17.3	26.4	0.72	20.5	31.5	0.76	22.7	37.6	0.84	24.6	37.2
80	0.74	24.6	32.6	0.86	29.4	39.6	0.96	32.3	44.2	1.14	36.5	48.2
100	2.32	35.7	67.2	2.82	40.2	73.6	3.12	44.3	77.3	3.32	47.6	82.3
125	3.65	56.3	88.6	4.02	63.2	96.4	4.45	70.3	102.3	4.62	78.3	114.5
150	5.36	73.1	108.6	5.85	82.5	123.5	6.23	88.6	131.2	6.75	93.5	142.3
200	6.47	58.3	90.5	7.62	75.9	114.17	8.9	96.8	144.7	11.1	124.2	170.2
250	9.6	86.5	134.2	11.3	112.6	169.3	13.2	143.5	214.5	16.5	184.2	252.3

ΔPset	60 kPa			70 kPa			80 kPa		
DN	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	0.98	26.3	41.6	1.16	28.4	45.3	1.26	31.6	48.4
80	1.22	38.6	55.2	1.35	41.2	58.3	1.44	43.4	61.2
100	3.52	50.2	86.3	3.82	53.7	90.4	4.02	56.3	93.5
125	5.02	85.3	129.5	5.32	92.3	131.5	5.63	98.5	140.2
150	7.23	106.3	151.3	7.86	114.2	162.3	8.21	121.3	170.3
200	12.4	151.6	191.3	14.4	166.4	221.6	15.8	198.4	236.6
250	18.4	224.8	283.6	21.4	246.8	328.6	23.4	294.2	350.8

ΔPset: 40~160kPa

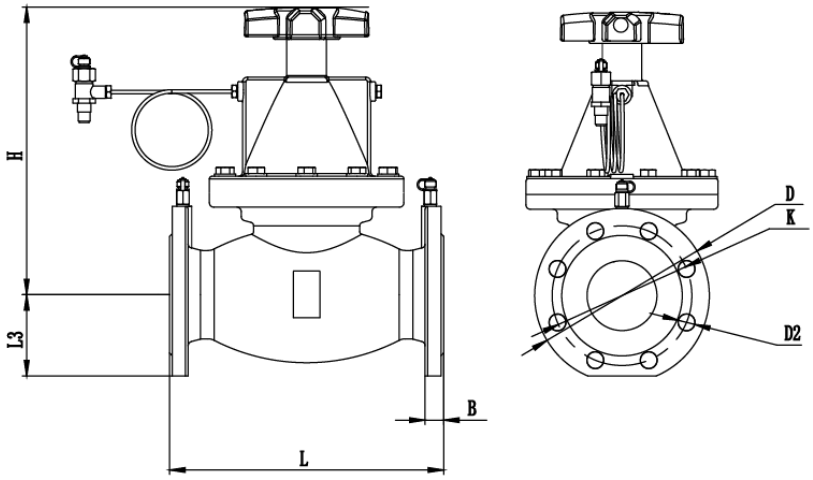
$q_{min}/q_{nom}/q_{max}(m^3/h)$

ΔPset	40 kPa			50 kPa			60 kPa			70kPa			80kPa		
DN	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	0.74	23.2	34.2	0.86	26.4	38.4	0.92	28.4	42.3	1.18	30.3	46.4	1.23	32.6	49.3
80	1.02	31.4	45.2	1.14	36.4	50.2	1.13	38.4	53.2	1.32	41.3	57.3	1.53	43.5	61.4
100	3.06	42.6	76.8	3.26	47.3	86.4	3.62	53.2	87.4	4.02	57.8	93.2	4.52	62.3	98.6
125	4.33	73.1	106.3	4.32	76.3	116.3	5.07	83.6	127.6	5.35	92.6	136.4	5.62	98.7	143.5
150	6.46	93.2	134.6	6.86	97.6	146.3	7.35	107.4	188.4	7.62	113.2	182.3	7.96	121.4	192.5
200	11.2	101.6	152.6	13.6	132.4	181.1	15.8	156.1	210.8	17.6	180.1	226.9	19.3	201.4	238.3
250	16.6	150.6	226.3	20.2	196.3	268.5	23.4	231.4	312.6	26.1	267.1	336.4	28.6	298.6	353.4

ΔPset	90kPa			100kPa			110kPa			120kPa			130kPa		
DN	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1.31	34.5	52.3	1.38	36.7	56.4	1.49	38.6	69.3	1.61	40.2	64.5	1.68	42.3	66.8
80	1.68	45.3	64.3	1.76	47.6	70.3	1.95	47.2	73.2	2.08	50.2	76.2	2.13	48.3	78.3
100	4.96	63.5	107.5	5.36	66.4	114.7	5.53	70.1	125.6	5.73	75.3	128.6	5.82	78.3	137.6
125	5.92	106.3	152.6	6.26	112.1	161.3	6.52	116.3	168.3	6.92	122.6	174.3	7.21	126.3	180.3
150	8.23	129.6	208.6	8.62	135.7	214.6	8.63	142.5	220.3	9.16	153.2	228.6	9.32	160.3	236.4
200	20.3	218.8	261.3	21.9	236.6	279.4	23.0	251.2	295.7	24.1	263.4	305.6	24.9	273.3	315.9
250	30.1	324.5	387.5	32.4	350.8	414.3	34.1	372.4	438.4	35.8	390.6	453.2	36.9	405.3	468.4

ΔPset	140kPa			150kPa			160kPa		
DN	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1.73	44.1	68.3	1.77	45.6	70.2	1.81	47.1	72.3
80	2.02	54.2	82.3	2.13	56.3	85.2	2.34	58.2	88.2
100	6.08	82.1	143.2	2.25	80.2	150.2	6.32	90.3	156.3
125	7.56	130.2	188.6	7.82	136.3	196.3	7.94	139.8	202.5
150	9.62	166.3	242.3	9.93	170.4	248.6	10.5	176.2	254.3
200	25.9	282.0	328.1	27.4	290.1	338.8	27.9	295.5	345.5
250	38.4	418.2	486.5	40.6	430.2	502.4	41.3	438.2	512.3

Dimension



PN16 DN	B mm	D mm	D2 mm	K mm	H mm	L mm	L3 mm	Weight kg
65	21	185	4-19	145	299	290	86	24.5
80	21	200	8-19	160	325.5	310	92	31.5
100	22	220	8-19	180	358	350	102	42
125	24	250	8-19	210	394	400	116	58
150	24	285	8-23	240	425	480	132	83
200	24	340	12-23	295	498	500	162	113
250	26	405	12-28	355	555	600	195	162

PN25 DN	B mm	D mm	D2 mm	K mm	H mm	L mm	L3 mm	Weight kg
65	21	185	8-19	145	299	290	86	24.5
80	21	200	8-19	160	325.5	310	92	31.5
100	22	235	8-23	190	358	350	102	42
125	24	270	8-28	220	394	400	116	58
150	24	300	8-28	250	425	480	132	83
200	24	360	12-28	310	498	500	162	113
250	26	425	12-31	370	555	600	195	162

Technical Parameters

• Functional Data	
Nominal size	DN65-DN250
Nominal pressure	PN16/PN25
DP setting range	20-80kPa/40-160kPa
Max. working DP	△Pset+350KPa
Connection standard	Flanged connection (comply with ISO7005-2)
Medium temperature	2~130°C
Medium	Chilled/hot water, glycol solution under 50%

• Spare Parts Materials	
Valve Body	Ductile iron
Valve Core	Stainless steel
Valve Stem	Stainless steel
Diaphragm	EPDM
Handwheel	Die-casting aluminum

Debugging Instrument

Hydraulic Balancing Debugging Instrument
HPS-200KPA.BOX
HPS-650KPA,BOX

HPS is a debugging instrument to measuring and documenting of differential pressure, flow, temperature and power consumption in hydronic systems. It connects to the supporting APP software in an Android phone via Bluetooth which could debug faster and more economical.

• Technical data	
Max. Permissible Pressure	1000kPa
DP range	HPS-200KPA.BOX: 0~200kPa HPS-650KPA,BOX: 0~650kPa
Pressure Range during Flow measurement (Recommended Value)	HPS-200KPA.BOX: 3~200kPa HPS-650KPA,BOX: 3~650kPa
Measured Deviation	DP Sensor: ≤0.5% Flow: DP Deviation + Valve Deviation
Battery Capacity	3000mA
Operating time	>20 hours
Charge Time	6 hours
Ambient temperature	Operating and charging status： 0~40°C Storage status: -20~60°C (Please exhaust the water in sensor when there is a risk of freezing)
Ambient humidity	Max. 90% RH
Charger	Output voltage: 12.6V DC Output current: 500mA