SmartX PIBCV DN10...DN250

Pressure Independent Balancing and Control Valves



Product Description

The SmartX PIBCV range is a comprehensive selection of automatic balancing and control valves that provide flow limitation with full control authority over hydronic regulation.

Automatic balancing within PIBCV valves provide stable flow regulation regardless of pressure fluctuations in the system and all valves have an adjustable flow limitation set point. The control valve portion of the PIBCV further regulates the media flow from close-off up to the maximum flow limit setting.

Typical applications are temperature control of chillers, air-handling units, heat exchanges and terminal units such as fan coils, induction units and radiant panels.

Features

- Reduced Energy Consumption
  - Pressure independence ensures no overflow of water/glycol through the valve. Limiting media flow to the design load of the coil has a significant effect on energy efficiency since systems operate for the majority of the time on a partial load where overflow occurs.
  - Overflow of media causes a degradation in ΔT at the heat exchanger. Uncontrolled overflow of media is an extremely wasteful and inefficient use of heat.
  - The correct and maximum design flow ensures a high differential in supply and return temperatures to provide high operational efficiency of the chiller or boiler.
- Improved Comfort
  - The SmartX PIBCV valves are not affected by other valves in the system that may be opening and closing throughout the day or other piping system disturbances providing more constant and comfortable room temperature.
- Reduced Pumping Costs
  - A reduction in overflows through the network reduces pumping costs. A smaller pump head and equipment is required compared to traditional configurations.
- Reduced Installation Costs
  - Only one valve needs to be installed rather than two or three since the SmartX PIBCV covers the pressure balancing, flow limitation and control modulation.
- Easy and quick Commissioning
  - SmartX PIBCV setup time is significantly reduced with a simple and accurate flow setting procedure without the need for flow charts, calculations or measuring equipment.
- Improved Reliability
  - Improved mechanical equipment reliability from reduced actuator movements.

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Product Selection: Threaded and Flanged Valves

Table 1. Threaded Valves

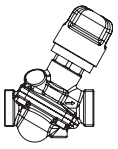
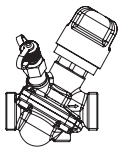
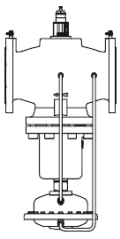
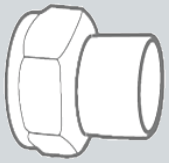
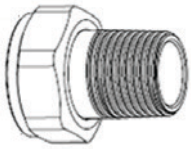
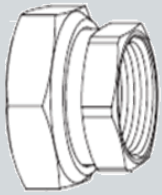
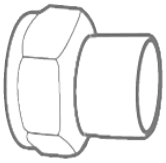
Image	DN	Q min (l/s)	Q nom 100% (l/s)	Q min (l/h)	Q nom (l/h)	Connection	Part No.		Suitable Actuator	
						Ext. Thread (ISO 228/1)	Without T/P Plugs	With T/P Plugs		
 without plugs  with plugs	DN10	0.008	0.042	30	150	G 1/2A	VP228E-10BQLNT	VP228E-10BQL	MP90 MP120 (thermal) MP130 (Motoric) MP300-SR (Spring Return)	
		0.015	0.076	55	275		VP228E-10BQSNT	VP228E-10BQS		
	DN15	0.015	0.076	55	275	G 3/4A	VP228E-15BQLNT	VP228E-15BQL		
		0.025	0.125	90	450		VP228E-15BQSNT	VP228E-15BQS		
		0.063	0.315	227	1 135		VP229E-15BQHNT			
	DN20	0.050	0.250	180	900	G 1A	VP228E-20BQSNT	VP228E-20BQS		
		0.094	0.472	340	1 700		VP229E-20BQHNT			
	DN25	0.09	0.472	340	1 700	G 1 1/4A	VP229E-25BQSNT	VP229E-25BQS		
		0.15	0.75	545	2 724		VP229E-25BQHNT			
	DN32	0.18	0.89	640	3 200	G 1 1/2A	VP229E-32BQSNT	VP229E-32BQS		
		0.22	1.11	795	4 000		VP229E-32BQHNT			
	DN40	0.8	2.1	3 000	7 500	G 2A		VP220E-40CQS	MP500C	MP500C-SR (Spring Return)
	DN50	1.4	3.5	5 000	12 500	G 2 1/2A		VP220E-50CQS		

Table 2. Flanged Valves

	DN	Q min (l/s)	Q nom (l/s)	Q min (l/h)	Q nom (l/h)	Part No. With T/P Plugs	Suitable Actuator	
	DN50	1.4	3.5	5 000	12 500	VP220F-50CQS	MP500C	MP500C-SR (Spring Return)
	DN65	2.2	5.6	8 000	20 000	VP220F-65CQS		
	DN80	3.1	7.8	11 200	28 000	VP220F-80CQS		
	DN100	4.2	10.6	15 200	38 000	VP220F-100CQS		
	DN125	10	25	36 000	90 000	VP221F-125CQS	MP2000	MP2000-SR (Spring Return)
	DN125	12	31	44 000	110 000	VP221F-125CQH		
	DN150	16	40	58 000	145 000	VP221F-150CQS		
	DN150	21	53	76 000	190 000	VP221F-150CQH		
	DN200	21	56	76 000	190 000	VP222F-200CQS	MP4000	
	DN200	28	75	100 000	250 000	VP222F-200CQH		
	DN250	31	83	112 000	280 000	VP222F-250CQS		
	DN250	41	103	148 000	370 000	VP222F-250CQH		

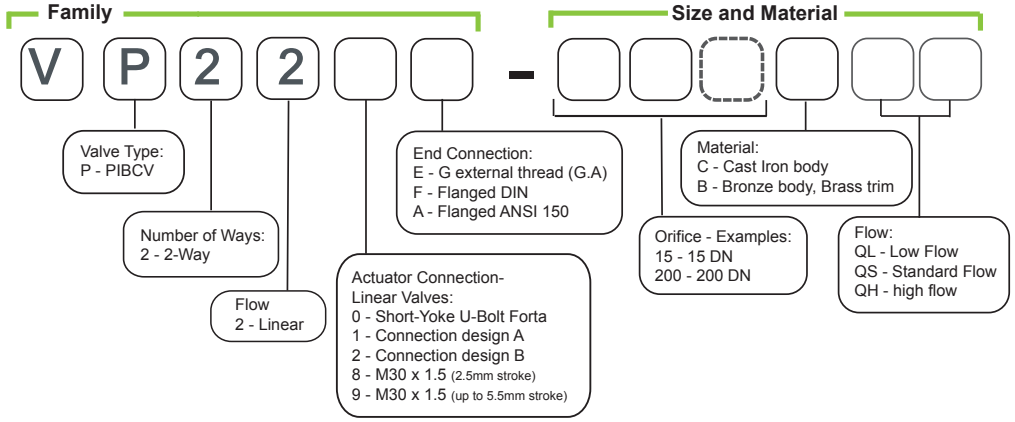
Note: A Higher flow, (Q max) is achievable on some sizes by increasing the pressure drop through the valve, please see technical data starting on page 9.

Table 3. Tail Pieces/Pipe Connections for threaded valves (2 pieces per pack)

Valve DNSize	Pipe Connection type	Part No.	Valve Connection	End Fitting Connection
DN10	 Solder	911 2113 010*	G1/2	15mm*
DN15		911 2113 015	G3/4	15mm
DN15		911 2113 115*	G3/4	22mm *
DN20		911 2113 020	G1	15mm
DN20		911 2113 120	G1	22mm
DN25		911 2113 025	G1.1/4	28mm
DN32		911 2113 032	G1.1/2	35mm
DN40		911 2113 040	G2	42mm
DN50		911 2113 050	G2.1/2	54mm
DN10	 R taper Male thread	911 2112 010	G1/2	R3/8
DN15		911 2112 015	G3/4	R1/2
DN20		911 2112 020	G1	R3/4
DN25		911 2112 025	G1.1/4	R1
DN32		911 2112 032	G1.1/2	R1. 1/4
DN40		911 2112 040	G2	R1.1/2
DN50		911 2112 050	G2.1/2	R2
DN10	 Female thread	911 2111 010*	G1/2	G1/2*
DN15		911 2111 015*	G3/4	G1/2*
DN20		911 2111 020	G1	G1/2
DN25		911 2111 025	G1.1/4	G3/4
DN32		911 2111 032	G1.1/2	G1
DN40		911 2111 040	G2	G1.1/4
DN50		911 2111 050	G2.1/2	G1.1/2
DN20	 Weld	911 2115 020	G1	26.9mm
DN25		911 2115 025	G1.1/4	33.7mm
DN32		911 2115 032	G1.1/2	42.4mm
DN40		911 2115 040	G2	48.3mm
DN50		911 2115 050	G2.1/2	60.3mm

* one piece compact design, additional coupler either side of the valve may be needed to ease assembly / dissasembly

Type Designation Explanation



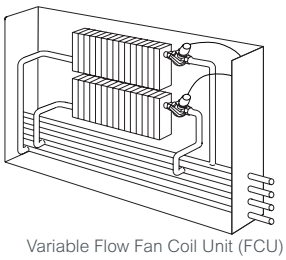
Implementation Benefits of PIBCV

- No Kv or authority calculations needed. Flow is the only parameter to be considered when designing or selecting the SmartX PIBCV.
  - The SmartX PIBCV always works reliably within the flow range. The maximum setting of the SmartX PIBCV corresponds with international standards for flow velocity in pipes.
  - The SmartX PIBCV can be used for all HVAC applications and the flow control can be modified from linear to logarithmic when combined with thermal electric or proportional actuators.
  - Compact design, essential when only limited space is available, for example in fan-coil units.
  - Easy commissioning. No specialized staff or measuring equipment needed.
  - Fast start-up. SmartX PIBCV valves don't need to be flushed or de-aired before use.
  - Trouble-free segmentation of the building project. The SmartX PIBCV will automatically control the flow, even when sections of the installation are still unfinished. It's not needed to re-adjust the SmartX PIBCV flow setting after finalization of the building project.

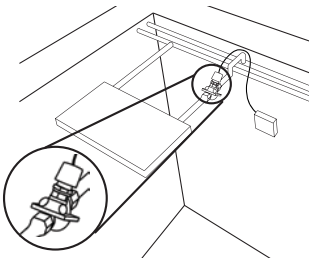
Applications

Variable flow systems: The focus application area of the SmartX PIBCV is for variable flow systems which includes terminal unit equipment like fan coils (FCU's) and radiation panels as well as larger plant equipment with air handling units (AHU's).

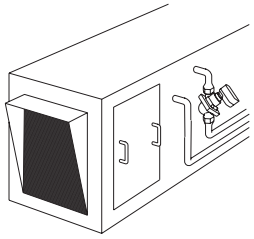
Constant flow systems: The SmartX PIBCV can work in numerous constant flow systems, In these applications the SmartX PIBCV is installed as an automatic flow limitation valve which may or may not be fitted with an actuator, ensuring the system is automatically balanced with energy efficient control.



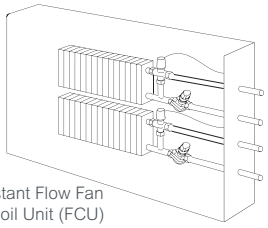
Variable Flow Fan Coil Unit (FCU)



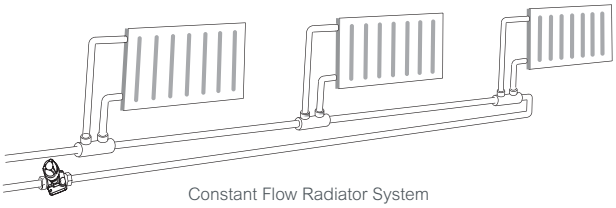
Variable Flow Radiant Panel



Variable Flow Air Handling Unit (AHU)



Constant Flow Fan Coil Unit (FCU)



Constant Flow Radiator System

Equipment area's for constant flow systems include radiant panels, fan coils (FCU's) and floor heating.

Control Performance

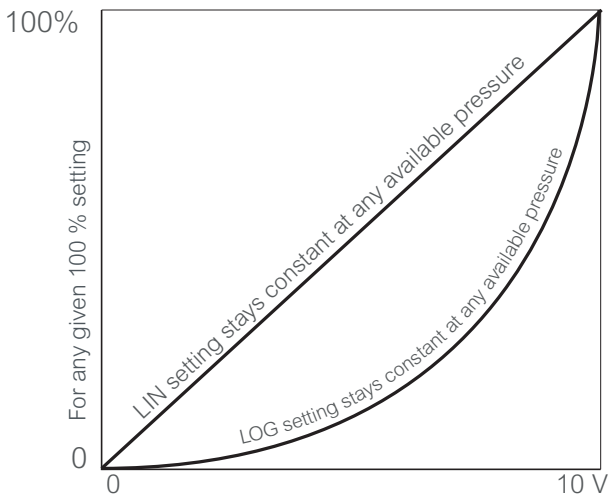
The SmartX PIBCV has a linear control characteristic and is pressure independent which means the control characteristic is independent from the available pressure and is not influenced by a low authority.

The flow limitation on the SmartX PIBCV is achieved by limiting the valve stroke. Schneider Electric motoric actuators calibrate to the varying stroke of the valves. This means the SmartX PIBCV keeps a predictable linear characteristic independent of the flow setting or differential pressure.

SmartX PIBCV actuators electronically adjust the control characteristic from linear to logarithmic (equal percentage) always providing a perfect adaptation regardless of the flow setting. This makes SmartX PIBCV suitable for all applications, including AHUs, where the equal percentage characteristic is needed to get a stable control loop. All modulating actuators can be switched from linear to logarithmic by changing a dipswitch setting on Modulating actuators.

The integrated differential pressure controller enables the control valve to have 100 % authority and will always provide stable control. At partial system load there is no resulting overflow downstream to the SmartX PIBCV, because the valve will always limit the flow to exactly what it is set to.

By installing the SmartX PIBCV the whole system is divided in completely independent control loops. There is a full range of Schneider Electric actuators suitable for every control strategy, including On/Off, 0…10 Volt or 4…20 mA modulating and 3-point floating.



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Function

The SmartX PIBCV valve consists of two parts:

1. Differential pressure controller
2. Control valve

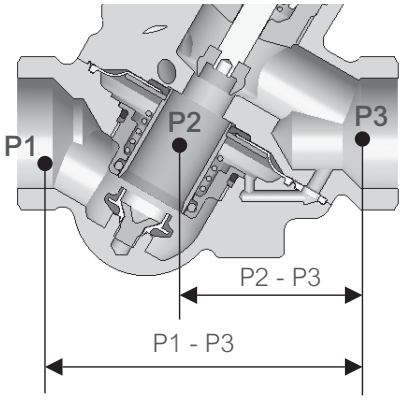
1. Differential Pressure Controller (DPC)

The differential pressure controller maintains a constant differential pressure across the control valve. The pressure difference Δp_{Cv} (P2-P3) on the membrane is balanced with the force of the spring. Whenever the differential pressure across the control valve changes (due to a change in available pressure, or movement of the control valve) the hollow cone is displaced to a new position which brings a new equilibrium and therefore keeps the differential pressure at a constant level.

2. Control Valve (CV)

The control valve has a linear characteristic. It features a stroke limitation function that allows adjustment of the Kv value. The percentage marked on the scale equals the percentage of 100 % flow marked on the pointer. Changing the stroke limitation is done by lifting the blocking mechanism and turning the top of the valve to the desired position, showed on the scale as a percentage. A blocking mechanism automatically prevents unwanted changing of the setting.

SX PIBCV DN10-32

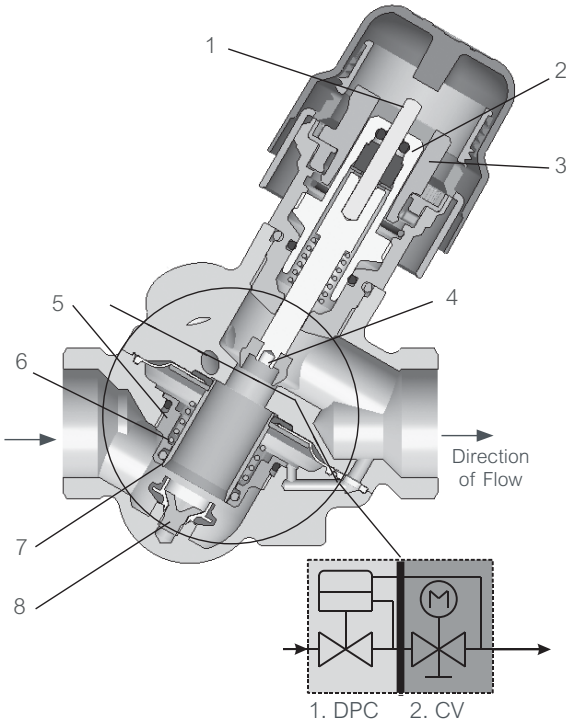


$\Delta p = (P1-P3)$
$\Delta p_{Cv} = (P2-P3)$

Design

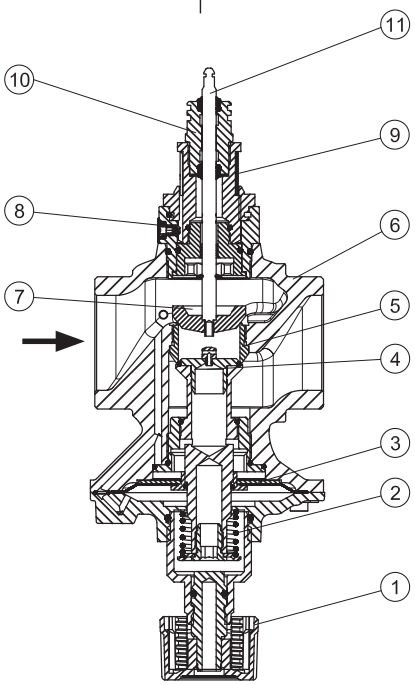
DN10-32

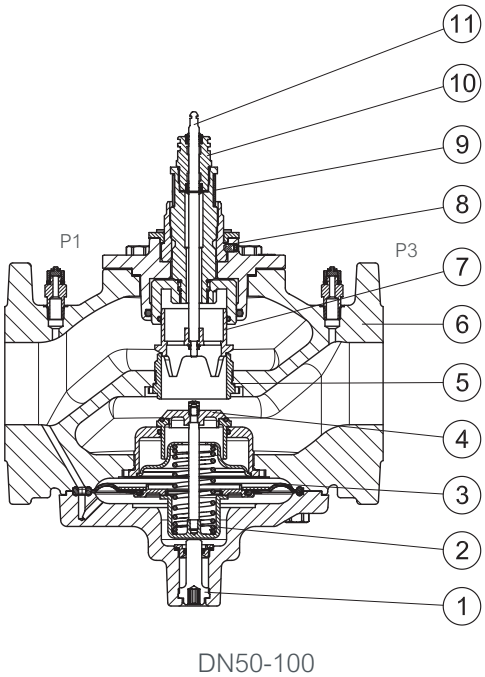
1 Spindle
2 Stuffing box
3 Pointer
4 Control valve's cone
5 Membrane
6 Main spring
7 Hollow cone (pressure controller)
8 Vulcanized seat (pressure controller)



DN40, 50, 100

1. Shut off screw
2. Main spring
3. Membrane
4. DP cone
5. Seat
6. Valve body
7. Control valves cone
8. Locking screw
9. Scale
10. Stuffing box
11. Spindle





DN50-100

PIBCV Flow Presetting

DN10-32

The max flow setting can be adjusted easily without using special tools. To change the presetting of the max flow (factory setting is 100 %) follow the four steps below:

① Remove the grey protective pointer or the mounted actuator.

② Raise the green pointer.

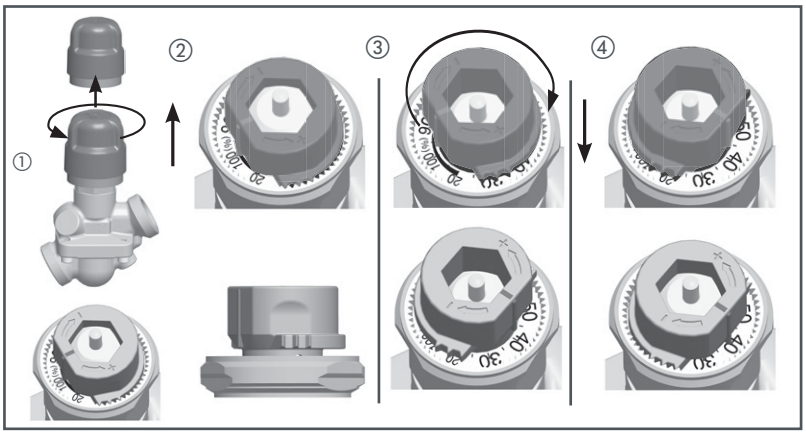
③ Turn (clock wise to decrease) to the new max flow presetting value.

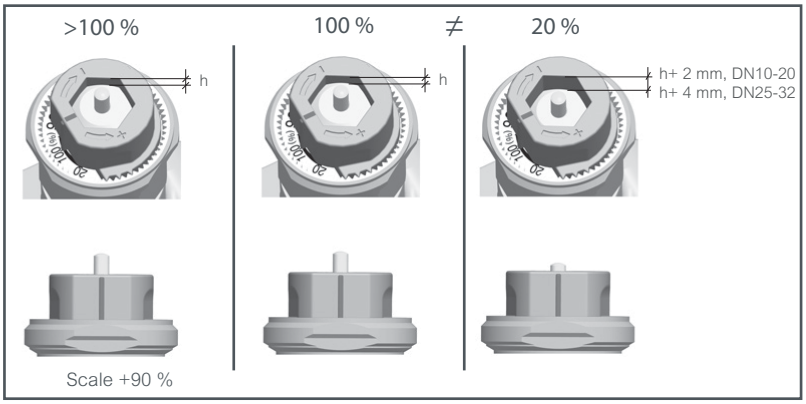
④ Press the pointer back into the lock position. After the pointer is clicked back into place the max flow presetting value is locked.

The presetting scale indicates values from 100 % flow to 0 %. Clock wise turning would decrease the flow value while counter clock wise would increase it.

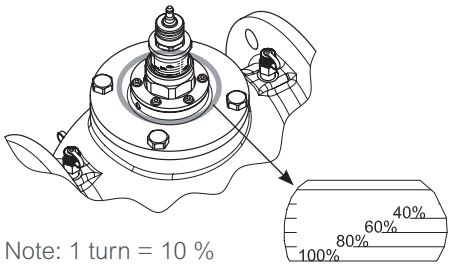
Example:
If the valve is a DN15 then the nom flow = 450 l/h =100 % presetting.
To set a flow of 270 l/h you have to set: 270/450 = 60 %.
Schneider Electric recommends a presetting/flow from 20 % to 100 %. Factory presetting is 100 %.
The DN10-32 valves can be set to a Qmax flow which is a setting above the Qnom setting of 100%. table 4 details the Qmax setting which is either limited to 110% or 120%.
The maximum reading on the scale is 100%, to adjust the flow setting beyond 100% the pointer will be adjusted anti-clockwise passed the max scale setting.

The flow setting above the Qnom is the readable value + 90%. Thus in this zone the pointer at 20% position will be a flow setting of 110% and at the 30% position the flow setting will be 120%.

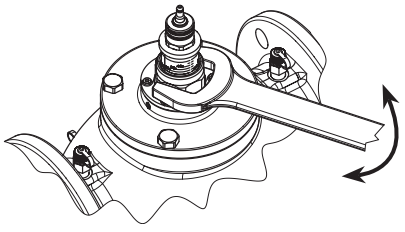




DN40-100

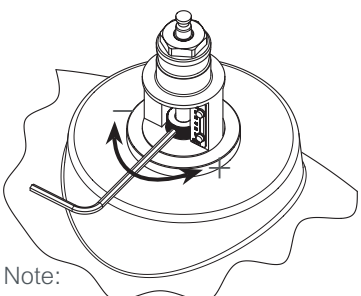


Note: 1 turn = 10 %

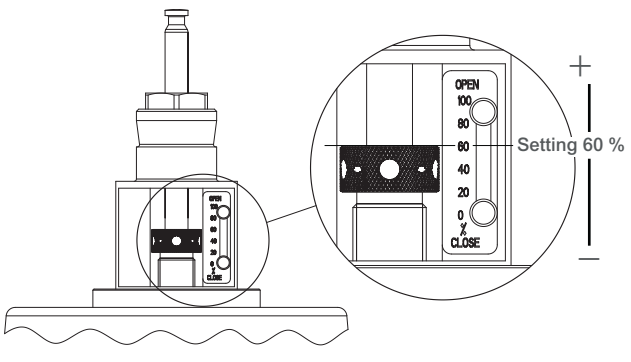


Max 25Nm

DN125-250



Note:
DN125 & 150: 1 turn = 5.0 %
DN200 & 250: 1 turn = 5.5 %

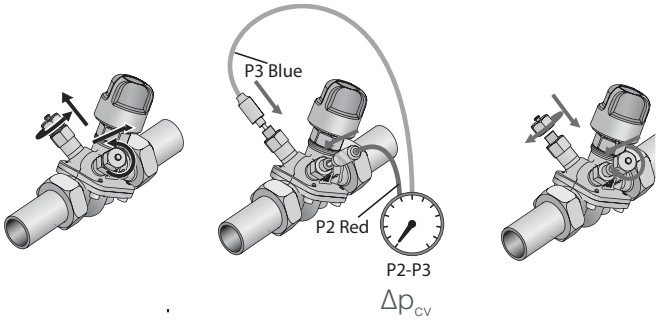


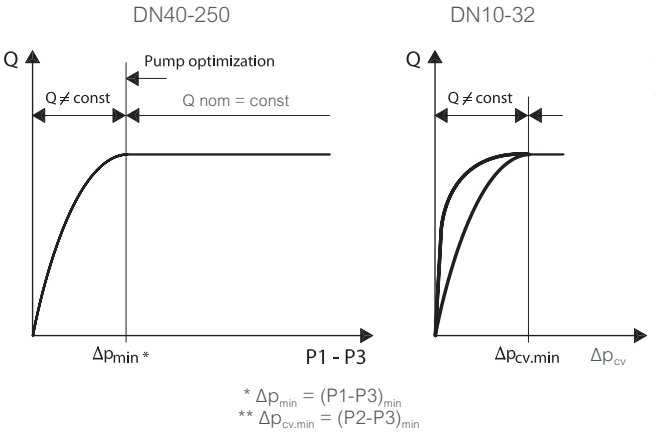
Pump Optimizing / Troubleshooting

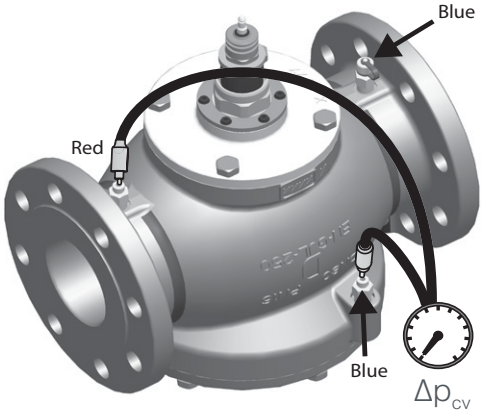
The DN10-100 PIBCV valves feature test plugs that allow measuring of the pressure difference Δpcv (P2 to P3) across the control valve. With the DN40-250 PIBCV valves the measuring can also be done between P1 to P3. If the operating pressure differential exceeds the minimum required pressure differential as detailed in the technical tables, flow limitation to the set point will be achieved. The measuring function of the test ports can be used to verify if enough operating pressure differential is available and thus verify the flow or measure the flow directly.

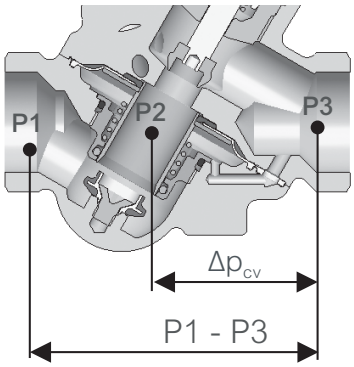
The P1 test plug can also be used to optimize the pump head. The pump head can be decreased until no more than the minimal required pressure is available on the most critical valve (in terms of hydronic). As the P1 test plug is not possible on the DN10-32 valves, a separate pressure taping for the critical index circuit should be made available for this measurement.

Verifying the pressure can be done by using traditional or electronic manometers.









Service Shut Off

DN10-32

For the service shut off function, it is recommended to install the valve in the supply water pipe. Valves are equipped with plastic shut-off mechanism that is to be used for isolating function up to 1 bar differential pressure.

DN40-100

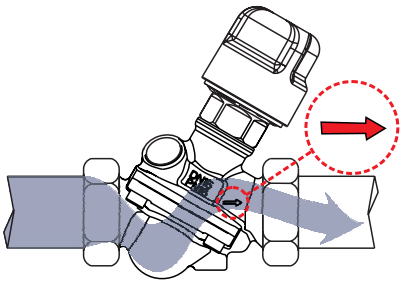
For the service shut off function, the valve can be installed in either supply or return pipe. Valves are equipped with manual shut-off for isolating function up to 16 bar.

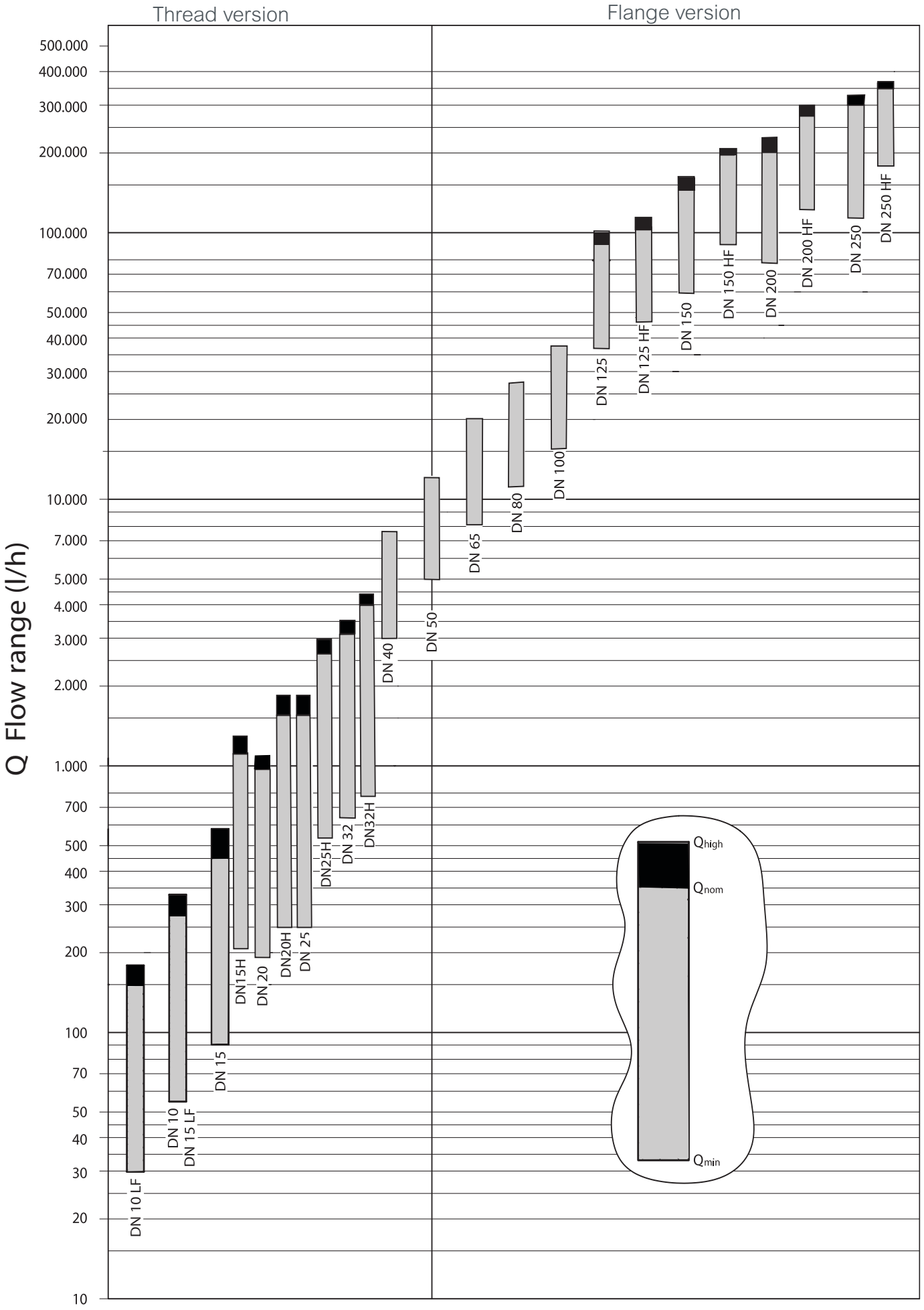
Flow Direction

A SmartX PIBCV valve is mono-directional, meaning the valve operates when the arrow on the valve body is aligned with the flow direction. When this rule is ignored the valve acts like a variable orifice that causes water hammer at sudden closing when available pressure has increased or the valve has been set to a lower value. In the case when a system condition allows backflows, it is strongly recommended to use a backflow preventer in order to avoid possible water hammer that can damage to the valve as well as other elements in the system.

It is recommended to fit a strainer upstream of the valve to increase reliability and to follow water treatment guidelines as detailed in VDI 2035.

The pipework system should be flushed prior to the operation.





Technical Data

Table 4. Threaded version, DN15-50

Nominal diameter		DN	10L	10S	15L	15S	15H	20S	20H	25S	25H	32S	32H	40	50
Test Plug No/Optional / Standard			Opt.				No	Opt.	No	Opt.	No	Opt.	No	Std.	Std.
Flow range	Q_{nom} (100%)[1]	l/h	150	275	275	450	1135	900	1700	1700	2700	3200	4000	7500	12500
	Q_{max} [4]		180	330	330	540	1250	1080	1870 [5]	1870 [5]	2970	3520 [5]	4400	7500	12500
Setting range [2]		%	20-120%				20-110%	20-120%	20-110%					40-100%	
Diff. pressure [3], [4], [6]	Δp_{Qnom} (Δp_{Qmax})	kPa	16-600 (18-600)				35-600 (40-600)	16-600 (18-600)	35-600 (40-600)	20-600 (25-600)	35-600 (40-600)	25-600 (30-600)	35-600 (40-600)	30-600	
Pressure class		PN	16												
Control range			Acc. to standard IEC 60534 control range is high as flow characteristic is linear (1:1000)												
Control valve's characteristic			Linear (could be converted by actuator to equal percentage)												
Leakage acc. to IEC 60534			No visible leakage							max. 0.05 % of Q_{nom}					
For shut off function			Acc. to ISO 5208 class A - no visible leakage												
Flow medium			Water and water mixture for closed heating and cooling systems according to plant type I for DIN EN 14868. When used in plant Type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1 + 2 are observed.												
Medium temperature		°C	−10 ... +120												
Stroke		mm	2.25				4.0	2.25	4.0	4.5				10	
Connection	ext. thread (ISO 228/1)		G ½ A		G ¾ A			G 1 A		G 1¼ A		G 1½ A		G 2 A	G 2½ A
	actuator		M30 x 1.5, with 10.4mm closing height											Short Yoke Forta U bolt	
Materials in the water															
Valve bodies			DZR Brass (CuZn36Pb2As - CW 602N)											Grey iron EN-GJL-250 (GG 25)	
Membranes and O-rings			EPDM												
Springs			W.Nr. 1.4568, W.Nr. 1.4310												
Cone (Pc)			W.Nr. 1.4305											CuZn40Pb3-CW 614N, W.Nr. 1.4305	
Seat (Pc)			EPDM											W.Nr. 1.4305	
Cone (Cv)			CuZn40Pb3 - CW 614N												
Seat (Cv)			DZR Brass (CuZn36Pb2As - CW 602N)											W.Nr. 1.4305	
Screw			Stainless Steel (A2)												
Flat gasket			NBR												
Sealing agent (only for valves with test plugs)			Dimethacrylate Ester												
Materials out of the water															
Plastic parts			PA											POM	
Insert parts and outer screws			CuZn39Pd3 - CW614N											-	

1) Factory setting of the valve is done at nominal setting range.
2) Regardless of the setting, the valve can modulate below 1 % of set flow.
3) Δp = (P1–P3) min~max
4) When set above 100 %, minimum starting pressure needed is higher, see figures in the ().
5) When set above 100 %, it can be used as a flow limiter only.
6) For Δp above 400 kPa, static pressure (P1) must be greater than 2 x Δp.

For suitability and usage in non-oxygen tight systems please observe instructions of the coolant producer.

Pc - pressure controller part Cv - Control valve part

Note: Media Compatibility

It is the responsibility of the installer or product specifier to verify media compatibility of the valves construction materials with the supplier of water treatment/heat transfer solution.

Filtration

Strainers should always be fitted upstream of the valve.

Technical Data

Table 5. Flange Version, DN50-DN100

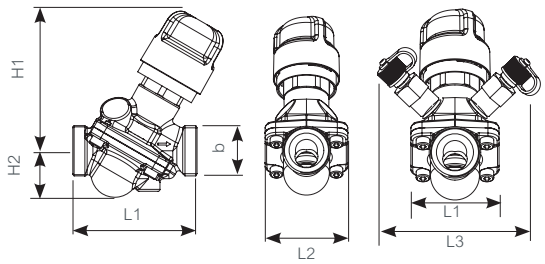
Nominal diameter		DN	50	65	80	100
Flow range	Q_{nom}	l/h	12 500	20 000	28 000	38 000
Setting range [2]		%	40-100%			
Diff. pressure [3], [5]	Δp_{Qnom}	kPa	30-600			
Pressure class		PN	16			
Control valve's characteristic			Linear (could be converted by actuator to equal percentage)			
Leakage acc. to standard IEC 60534			max. 0.05 %			
For shut off function			Acc. to ISO 5208 class A - no visible leakage			
Flow medium			Water and water mixture for closed heating and cooling systems according to plant type I for DIN EN 14868. When used in plant Type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1 + 2 are observed.			
Medium temperature		°C	−10 ... +120			
Stroke		mm	10	15		
Connection	flange		PN 16			
	actuator		Forta Short Yoke U bolt			
Materials in the water						
Valve bodies			Grey iron EN-GJL-250(GG25)			
Membranes/ Bellow			EPDM			
O-rings			EPDM			
Springs			W.Nr. 1.4568, W.Nr. 1.4310			
Cone (Pc)			CuZn40Pb3 - CW 614N, W.Nr. 1.4305			
Seat (Pc)			W.Nr. 1.4305			
Cone (Cv)			CuZn40Pb3 - CW 614N			
Seat (Cv)			W.Nr. 1.4305			
Screw			Stainless Steel (A2)			
Flat gasket			NBR			

Table 6. Flange Version, DN125 - DN250

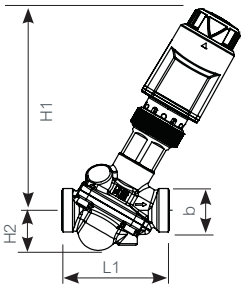
Nominal diameter		DN	125	125 HF	150	150 HF	200	200 HF	250	250 HF
Flow range	Q_{nom} (Q_{max})	l/h	90 000 (100 000)	110 000 (120 000)	145 000 (160 000)	190 000 (209 000)	200 000 (220 000)	270 000 (300 000)	300 000 (330 000)	370 000 (407 000)
Setting range [2]		%	40-110%							
Diff. pressure [3], [4]	ΔpQ_{nom} (ΔpQ_{max})	kPa	40-600 (60-600)	60-600 (80-600)	40-600 (60-600)	60-600 (80-600)	45-600 (65-600)	60-600 (80-600)	45-600 (65-600)	60-600 (80-600)
Pressure class		PN	16							
Control range			Acc. to standard IEC 60534 control range is high as flow characteristic is linear.							
Control valve's characteristic			Linear (could be converted by actuator to equal percentage)							
Leakage acc. to standard IEC 60534			max.0.01 % of Q_{nom}		max. 0.01 % of Q_{nom}					
Flow medium			Water and water mixture for closed heating and cooling systems according to plant type I for DIN EN 14868. When used in plant Type II for DIN EN 14868 appropriate protective measures are taken. The requirements of VDI 2035, part 1 + 2 are observed.							
Medium temperature		°C	−10 ... +120							
Stroke		mm	30							
Connection	flange		PN 16							
	actuator		Schneider Electric standard							
Materials in the water										
Valve bodies			Grey iron EN-GJL-250 (GG 25)							
Membranes/ Bellow			W.Nr.1.4571		EPDM					
O-rings			EPDM							
Springs			W.Nr.1.4401		W.Nr.1.4310					
Cone (Pc)			W.Nr.1.4404NC		W.Nr.1.4021					
Seat (Pc)			W.Nr.1.4027							
Cone (Cv)			W.Nr.1.4404NC		W.Nr.1.4021					
Seat (Cv)			W.Nr.1.4027							
Screw			W.Nr.1.1181							
Flat gasket			Graphite gasket		Non asbestos					

1) factory setting of the valve is done at nominal setting range.
2) Regardless of the setting, the valve can modulate below 1 % of set flow.
3) Δp = (P1–P3) min~max
4) For Δp above 400 kPa , static pressure (P1) must be greater than 2 x Δp Pc - pressure controller part
Cv - Control valve part

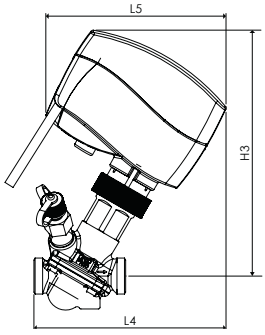
Dimensions (mm)



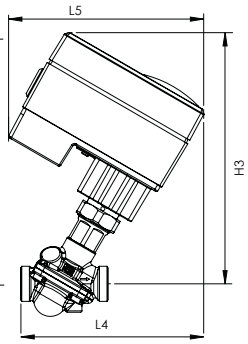
DN10-32
with close off cap



With MP120 Actuator



With MP130 Actuator

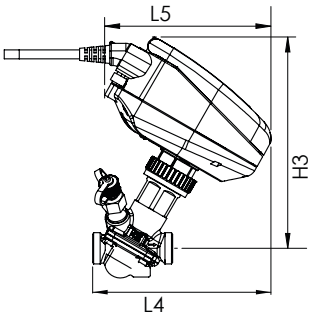


With MP300-SR Actuator

Table 7. Threaded Valves DN10…DN32

Type	L1	L2	L4				H1	H2	H3				b ISO 228/1	Valve weight (kg)
			MP90	MP120	MP130	MP300 -SR			MP90	MP120	MP130	MP300 -SR		
DN10	53	36	118	101	111	130	74	20	140	120	143	185	G½A	0.38
DN15	65	45	125	108	118	137	77	25	143	123	145	188	G¾A	0.48
DN20	82	56	133	117	127	146	79	31	145	125	148	190	G 1A	0.65
DN25	104	71	148	132	142	160	88	40	153	133	156	199	G 1¼A	1.45
DN32	130	90	166	149	160	178	99	49	164	144	167	210	G 1½A	2.21

L5: MP130: 104; MP300: 146; MP90: 110.21. L3 (plugs): 79



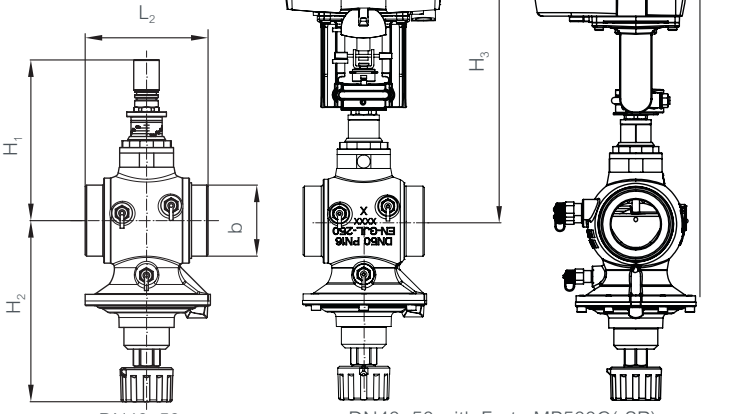
With MP90 Actuator

Table 8. Threaded Valves DN40, DN50

Type	L_1	L_2	H_1	H_2	H_3		b	Wght
					MP500C	MP500C -SR		
	mm						ISO 228/1	kg
DN40	110	143	170	174	302	305	G 2A	6.9
DN50	130	181	170	174	302	305	G 2½A	7.8

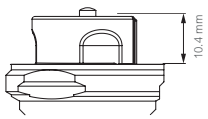
Table 9. Flanged Valves DN50-DN100

Type	L_1	L_2	H_1	H_2	H_3		a	Wght
					MP500	MP500C -SR		
	mm						(EN 1092-2)	kg
DN50	230	198	170	174	302	305	165	14.2
DN65	290	223	220	172	351	354	185	38.0
DN80	310	232	225	177	356	359	200	45.0
DN100	350	256	240	187	372	375	220	57.0

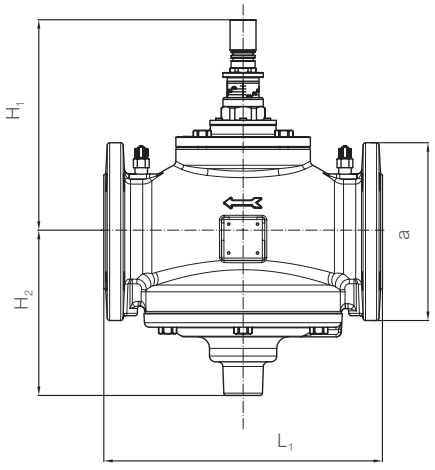


DN40, 50

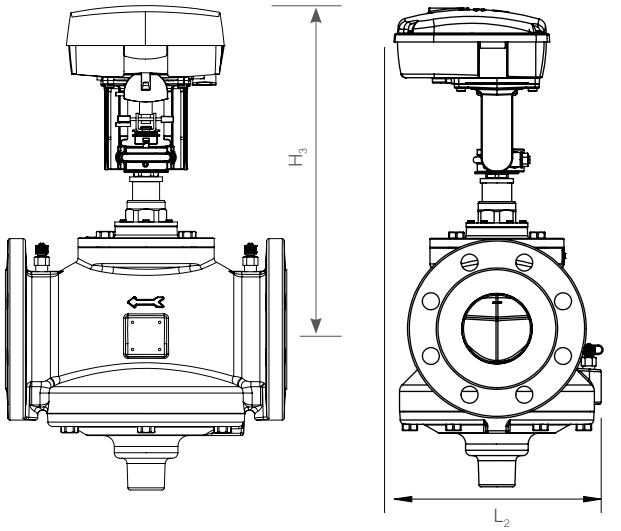
DN40, 50 with Forta MP500C(-SR)



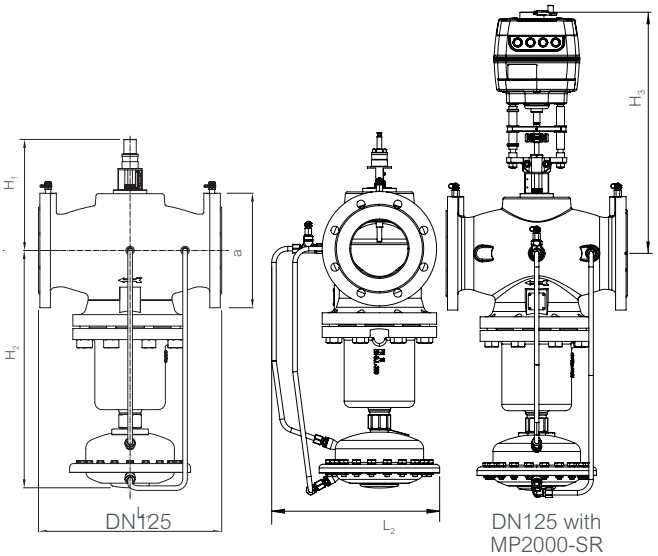
Closing point (measure for DN10-32



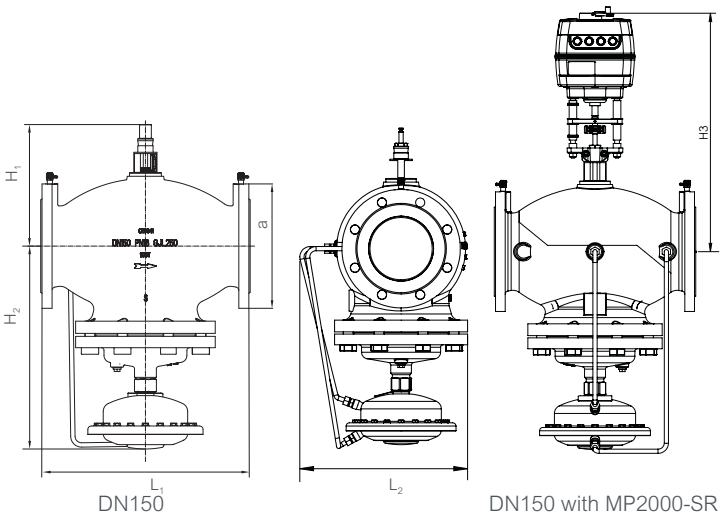
DN50-100



DN50-100 with Forta MP500C(-SR)



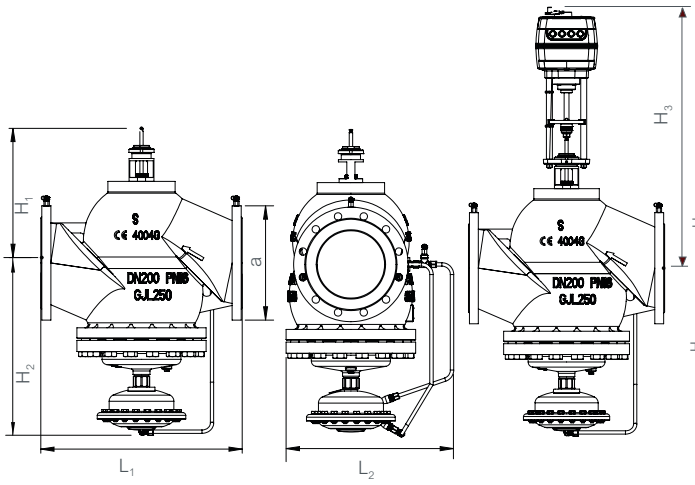
DN125 DN125 with MP2000-SR



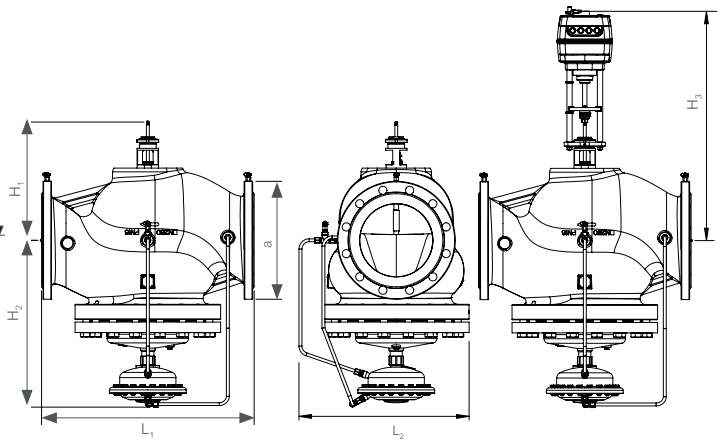
DN150 DN150 with MP2000-SR

Table 10. Flanged DN125, DN150 (mm)

Size	L_1	L_2	H_1	H_2	H_3		a (EN 1092-2)	Weight (kg)
					MP2000	MP2000-SR		
DN125	400	367	272	518	511	532	250	85.3
DN150	480	403	290	481	547	568	285	138



DN200 DN200 with MP4000



DN250 DN250 with MP4000

Table 11. Flanged DN200, DN250

Size	L_1	L_2	H_1	H_2	H_3	a (EN 1092-2)	Weight (kg)
					MP4000		
DN200	600	497	434	483	783	340	219
DN250	730	584	406	573	788	405	342