

146 PICV

pressure independent
control valve



altecnic
Caleffi group

146 PICV pressure independent control valve

Application

The pressure independent control valve (PICV) is a valve comprising an automatic flow rate regulator and a control valve with actuator.

The valve can adjust the flow rate and keep it constant in the presence of changing differential pressure conditions of the circuit.

The valve is supplied with an actuator for proportional (0) 2 to 10 V control, a manually operated gearbox is also available.

Note: The valve should not be used without an actuator or gearbox.

The regulating characteristic of the valve is linear.

The design includes features to minimise damage caused by water hammer.

The valve can isolate the main flow by means of the butterfly valve.

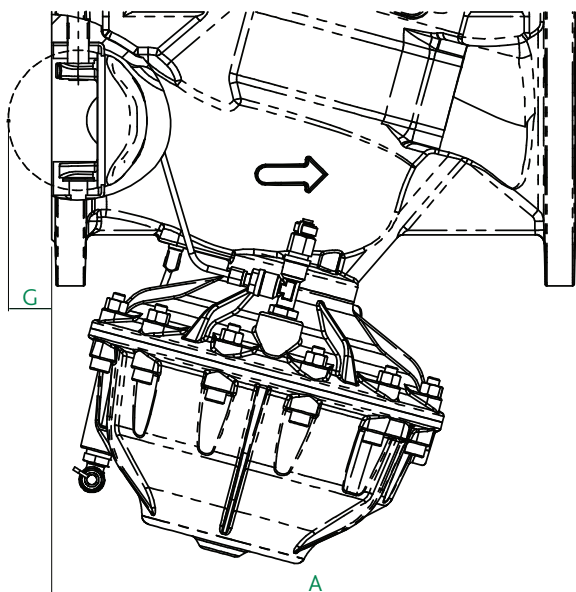
The flow rate, temperature and pressure measurements are possible using the test ports.

The valve can be used in heating and air-conditioning systems.

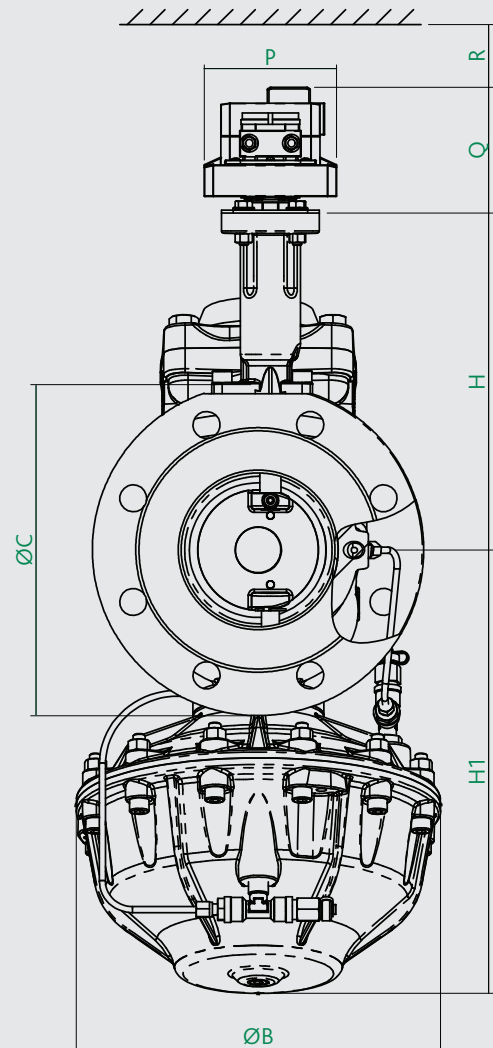
Product Range

Product Code	Valve Size	Actuator Code
146060	DN65	146014
146080	DN80	146014
146100	DN100	146015
146120	DN125	146015
146150	DN150	146015

Dimensions



Dimensions

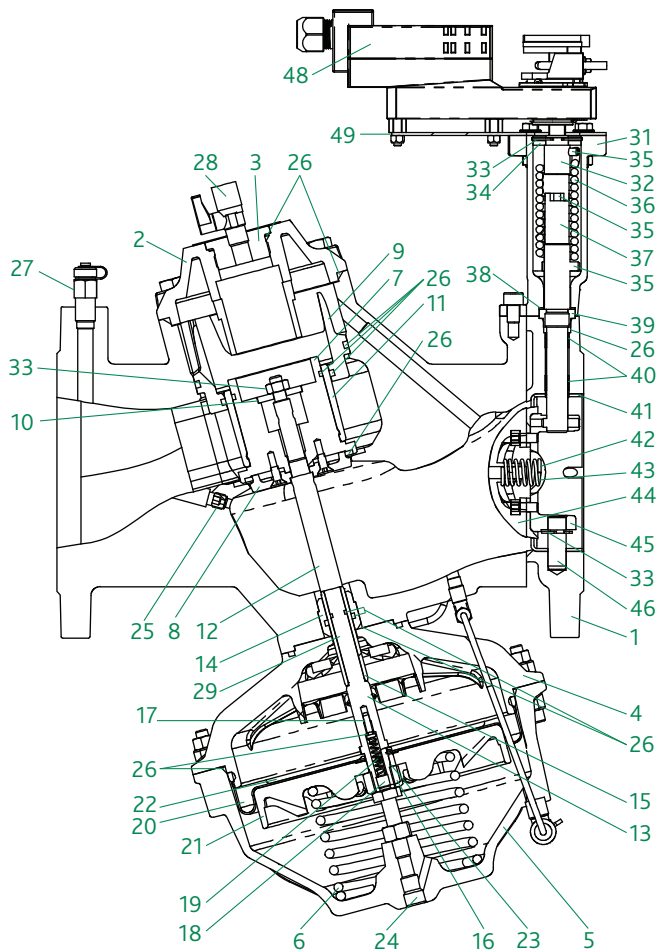


Prod Code	DN	A	B	G	H1	H
146060	65	290	200	18	217	205
146080	80	310	242	23	281	214
146100	100	350	242	36	295	224
146120	125	400	242	47	317	272
146150	150	480	242	68	341	301

Prod Code	C	Q	R	P	Weight Actuator	Weight Gearbox
146060	185	84	>100	100	23.3 kg	23.0 kg
146080	200	84	>100	100	29.8	29.5
146100	220	84	>100	100	35.3	35.0
146120	250	84	>100	100	48.1	47.8
146150	285	84	>100	100	77.1	76.8

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Components



Item	Component	Material
1	Body	Cast iron BS EN GJL 250
2	Bonnet	Cast iron BS EN GJL 250
3	Nut	Aluminium
4	Spring housing cover	Aluminium
5	Spring housing	Aluminium
6	Spring	Stainless steel AISI 302
7	Shutter	Aluminium
8	Shutter cover	Brass BS EN12164 CW617N
9	Guide	Aluminium
10	Plate	Brass BS EN12164 CW617N
11	Bush	R-PTFE
12	Stem	Brass BS EN12164 CW617N
13	Diaphragm stem	Brass BS EN12164 CW617N
14	Stem guide	Brass BS EN12164 CW617N
15	Bush	R-PTFE
16	Hexagonal nut	Brass BS EN12164 CW617N
17	Over pressure relief shutter	Brass BS EN12164 CW617N
18	Over pressure relief spring	Stainless steel

Components

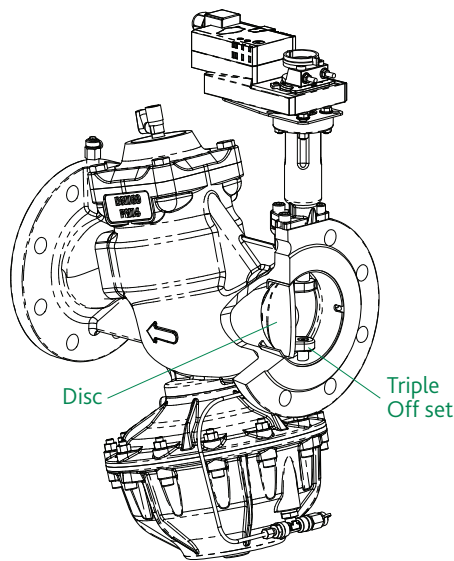
Item	Component	Material
19	Over pressure relief cap	Stainless steel AISI 304
20	Diaphragm	EPDM
21	Diaphragm bearing plate	Aluminium
22	Diaphr. upper bearing plate	Stainless steel AISI 304
23	Spring pin	Stainless steel
24	Plug	Brass - nickel plated
25	By-pass screw	Stainless steel
26	O' ring	EPDM
27*	Test plug	Brass - nickel plated
28	Ball valve 1/4" m x f	Brass - nickel plated
29*	Fitting	Brass - nickel plated
30*	Capillary tube	Copper
31	Actuator mounting flange	Aluminium
32	Stem	Brass BS EN12164 CW617N
33	Retaining ring	Stainless steel
34	Washer	Brass BS EN12164 CW617N
35	Dowel pin	
36	Over torque preventing spring	Spring steel
37	Stem	Brass BS EN12164 CW617N
38	Sliding washer	PTFE
39	Spacer	Brass BS EN12164 CW617N
40	Bush	Stainless steel + PTFE
41	Disc seat	Stainless steel AISI 304
42	Over pressure relief shutter	Brass BS EN12164 CW617N
43	Over pressure relief spring	Brass BS EN12164 CW617N
44	Cover DN100	GRP polyster
44	Cover	Aluminium
45	Disc	Brass BS EN12164 CW617N
46	Pin	Brass BS EN12164 CW617N
47	Bolt and nut	Stainless steel
48	Electric actuator	
49	Actuator mounting plate	
50*	Gearbox	
51*	Spacer	

* Components not shown

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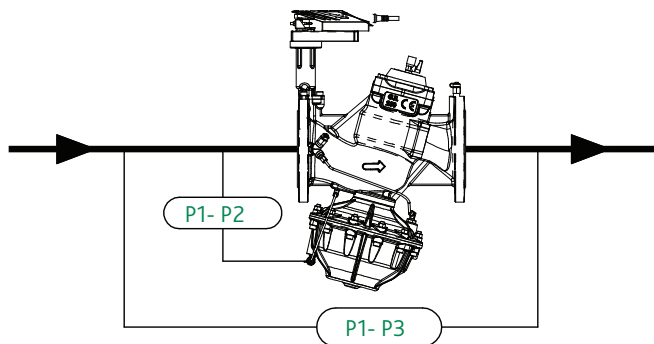
Features

The valves can regulate over a wide range of flow rates. Regulation is achieved by a triple offset butterfly valve that ensures low operating torques and accurate regulation. The characterised shape of the disc determines linear regulation. The design includes features to avoid damage to the internal components and the actuator due to water hammer. The gearbox for manual actuation has a position locking feature to prevent unauthorised adjustment.



Flow Range & Kv Values

Product Code	Size	Differential Pressure P1-P3		Flow Range				Kvs m ³ /h
		Min kPa	Max kPa	Min m ³ /h	Max m ³ /h	Min l/s	Max l/s	
146060	DN65	50	400	5	28	1.39	7.77	38
146080	DN80	50	400	6	38	1.67	10.5	51
146100	DN100	50	400	8	75	2.22	20.8	98
146120	DN125	50	400	14	125	3.89	34.7	172
146150	DN150	50	400	16	160	4.44	44.4	202

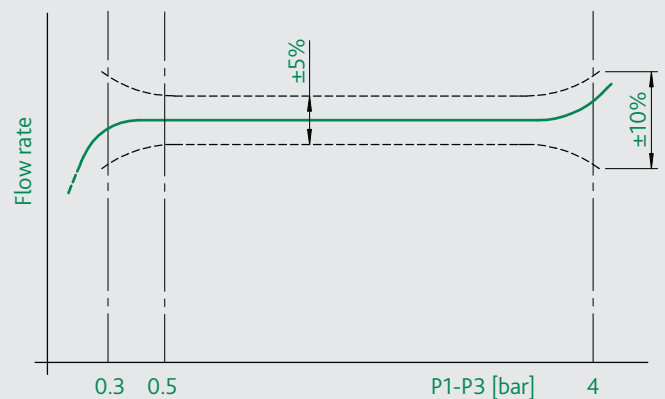
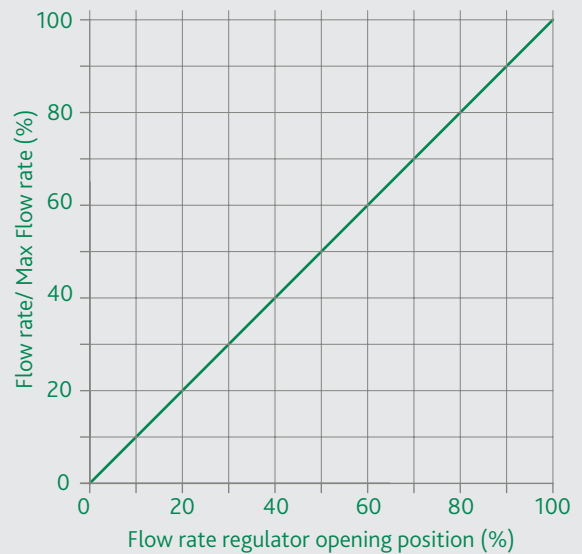


Percentage error on nominal flow rate at P1-P3 differential pressure changes

Technical Specification

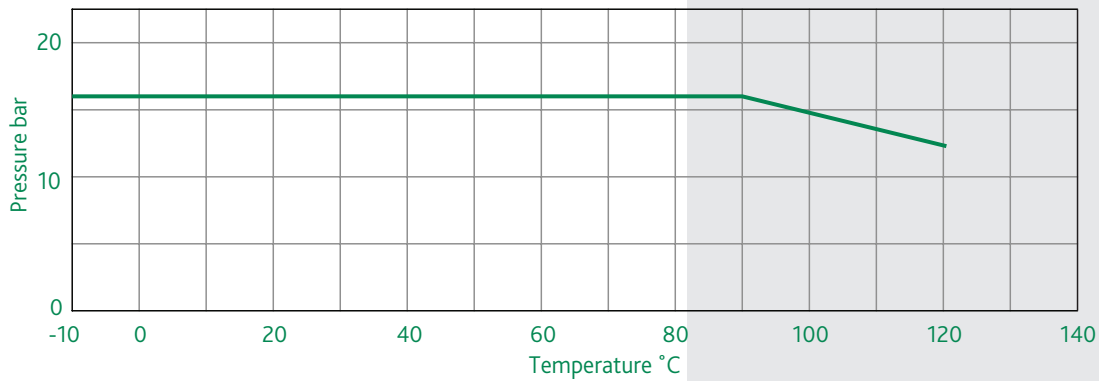
Face to face:	BS EN 558-1
Flanged PN16:	BS EN 1092 -2
Design:	BS EN12516
Maximum static pressure:	16 bar
Maximum differential pressure:	4 bar
Temperature range:	-10 to 120°C
Medium:	water & water glycol mix
Maximum glycol:	50%

Linear Control Characteristic



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Pressure - Temperature Chart



Actuator Specification

Autuator Code	Valve Sizes
146014	DN65 & DN80
146015	DN100 to DN125

Item	Specification
Nominal voltage	AC24 V 50/60 Hz / DC 24V
Control signal	(0) 2 to 10 V DC
Position Feedback U	2 to 10 V DC
Power supply range	AC 19.2 - 28.8 V / DC 21.6 - 28.8 V
Torque min @ nominal voltage	DN65 to DN80 - 10 Nm DN100 to DN150 - 20 Nm
Manual override	Yes
Angle of rotation	Max 95° - can be limited at both ends with mechanical adjustment and stops
Running time - 90°	150 second
Automatic adjustment of running time, operating range and measuring signal U to match the mechanical angle of rotation	Yes
Degree of protection	IP 54 (in all mounting positions)
Ambient temperature range - running	-30 to 50°C
Ambient temperature range - storing	-40 to 80°C
Humidity	95% r.H - non condensing
Maintenance	Maintenance free
Auxillary limit switches	Upon request



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Manual Gearbox



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