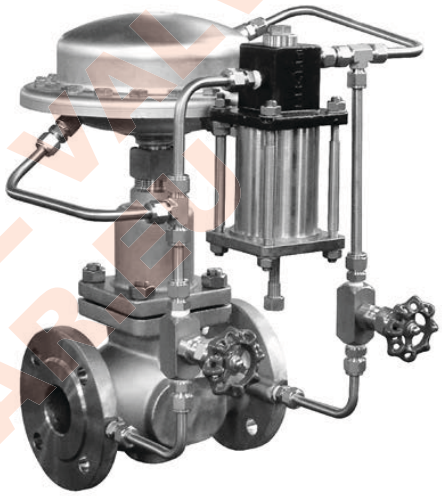
LPI15
Pilot–Operated Pressure Control Valve

LAPAR
Lapar Control Valve

Code	Actuator	Action	Air Fail Position	Control	Structure	Body Material	Sealing Material	Core Material	Connection	DN	PN
LPI15 –	P Pilot	A Upstream control	1 Open	B Self–regulating	4 Low temperature	A CF3M	P PTFE	A CF3M	1 Flange		
	0 Others	B Downstream control	2 Close	0 Others	5 Belows type	B CF8M	Y FEP(F46)	B CF8M	0 Others		
			0 Others		6 High temperature	C CF8	R BODY	C CF8			
					7 Normal	D WCB	S Stellite	I CF3			
					0 Others	I CF3	3 Gr	L CE3MN			
						L CE3MN	4 WC	2 Ti			
						2 Ti	0 Others	0 Others			
						5 WCC					
						0 Others					

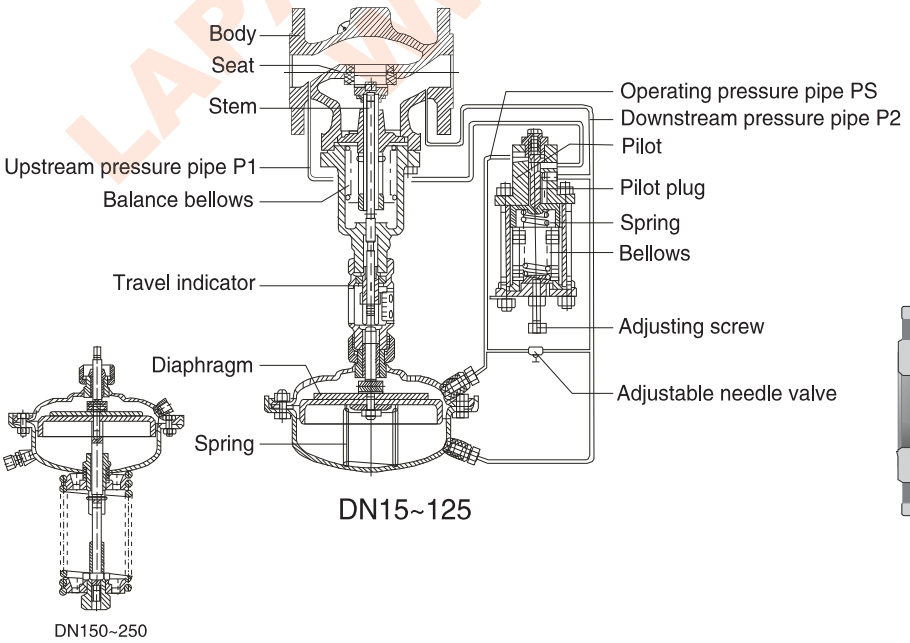
Overview

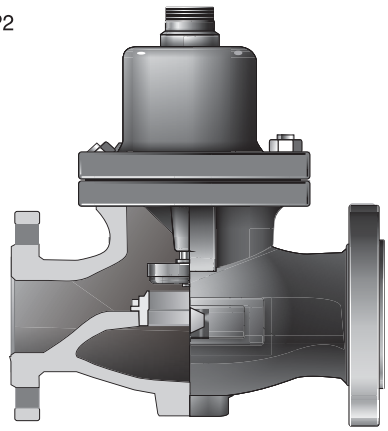
The pilot–operated pressure control valve is composed of the control valve, pilot and actuator.It is suitable for controling differential pressure in the pipes of non–crrosive liquids, gases and steams. when the diferential pressure rises, the control valve is closed.



The main features are as follows:
1.It has the pressure balancing function with high sensitivity.
2.Low noise, reliable performance，free of maintenance.
3.The standard modular design is adopted.
4.Various combined controls can be carried out through the assemblies.

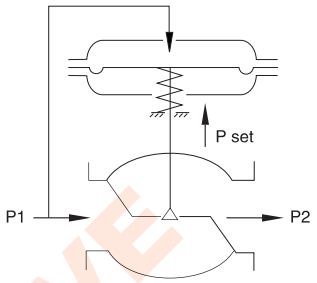
Exploded View





Working Principle

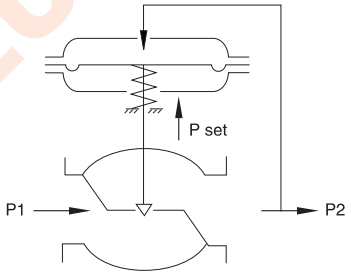
A. Self–Operated Upstream Pressure Control Valve



After throttling by the plug and seat, the before–valve pressure P1 of the process medium is changed into the after–valve pressure P2. Through the control pipeline, P1 is input to the upper diaphragm chamber of the actuator and acts on the top disc. The acting force produced balances the reacting force of the spring, determining relative positions of the plug and seat and controlling the before–valve pressure. When the before–valve pressure P1 increases, the acting force of P1 that acts on the top disc will increase accordingly.At the time, the acting force on the top disc is higher than the reacting force of the spring to make the plug move away from the seat, until the acting force om the top disc balances the reacting force of the spring.At the time, the flow area between the plug and seat is increased, the flow resistance becomes lower and P1 is reduced to the set value. Likewise, when the before–valve pressure P2 decreases,the acting direction is reverse to the above. This is the working principle during the control of before–valve pressure.

When it is necessary to change the set value of before–valve pressure P1, please adjust the adjusting nut.

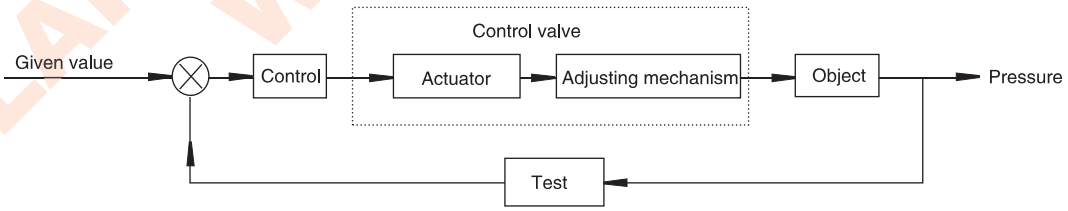
B. Self–Operated Downstream Pressure Regulating Valve



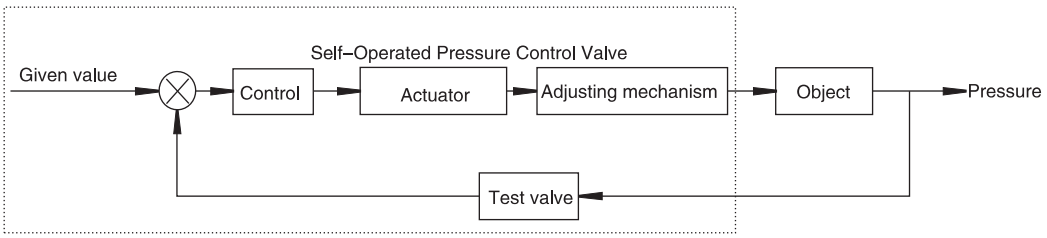
After throttling by the plug and seat, the before–valve pressure P1 of the process medium is changed into the after–valve pressure P2. Through the control pipeline, P2 is input to the lower diaphragm chamber of the actuator and acts on the top disc. The acting force produced balances the reacting force of the spring, determining relative positions of the plug and seat and controlling the after–valve pressure. When the after–valve pressure P2 increases, the acting force of P2 that acts on the top disc will increase accordingly. At the time, the acting force on the top disc is higher than the reacting force of the spring to make the plug close towards the seat, until the acting force on the top disc balances the reacting force of the spring. At the time, the flow area between the plug and seat is reduced, the flow resistance becomes higher and P2 is reduced to the set value. Likewise, when the after–valve pressure P2 decreases, the acting direction is reverse to the above This is the working principle during the control of after–valve pressure.

When it is necessary to change the set value of after–valve pressure P2, please adjust the adjusting nut.

For the difference between the pressure regulating valve and control valve:



Control valve



Self–Operated Pressure Control Valve

Specifications

Working Temperature

DN	Controller	Actuator	Accessories	Temperature	Seat & Sealing
15~250	V230	DA6/DA4	/	≤150℃	Metal Sealing
15~250	V231	DA6/DA4	/	≤150℃	
15~125	V230	DA6	Cooling Tank	≤200℃	
15~125	V230	DA6	Cooling Tank + Heat Sink / Extension	≤300℃	
150~250	V230	DA4		≤300℃	

Normal Size type

DN		15	20	25	32	40	50	65	80	100	125	150	200	250
Kvs		4	6.3	8	16	20	32	50	80	125	160	280	320	400
Value Z		0.6			0.55		0.5		0.45	0.4	0.35	0.3	0.2	
△Pmax.(MPa)	PN16	1.6								1.5		1.2	1.0	
	PN40	2.0												
△Pmin.(MPa)		0.08										0.1		
Leakage	V230	$4x10^{-4}$ of whole travel												
	V231	10 Bubbles/min						20 Bubbles/min				40 Bubbles/min		
Hysteresis Error		≤ ±4%												

Small Size type

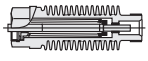
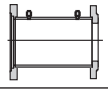
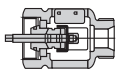
DN(mm)	15~32									
Kv	0.01	0.03	0.09	0.14	0.21	0.34	0.54	0.85	1.4	2.1
Port size (mm)	6					8		11		14
Trim type	Single Seat Metal Sealing									
Leakage	Class V									

Actuator

Effective Area (cm^2)	250
Max. Working Pressure (MPa)	2.5
Pressure Seting Range (MPa)	0.01~0.12; 0.08~0.25; 0.2~0.5; 0.45~1.0; 0.6~2.0
Max. Differential Pressure (MPa)	0.4
Sensing Line / Connector	Copper or Stainless Steel Pipe Φ10x1(mm), Ferrule Connector R1/4"
Regulation Accuracy	±4%

Remark: DA6 for DN15~125, DA4 for DN150~250

Accessories

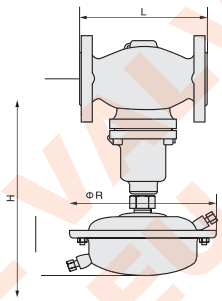
	Cooling Tank 1L Cooling Tank 3L	Temperature ≥150℃ and actuator effective area > 630cm^2
	DT–Ⅰ Heat Sink DT–Ⅱ Heat Sink	For DN15~125, and temperature between 200℃–350℃ And actuator effective area > 630cm^2 (bellows sealing type)
	FJC Extension	For DN150–250, Temperature 150℃–200℃
	FHC Travel Indicator	For temperature ≥200℃

Dimensions and Weight

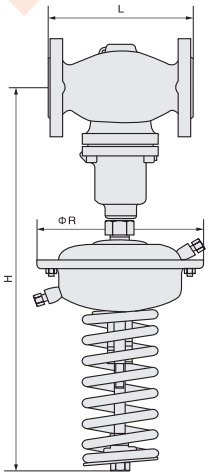
A ϕR \ DN		15	20	25	32	40	50	65	80	100	125	150	200	250
DA6 ϕ263mm	H mm	372	372	398	398	400	400	435	435	435	540	/	/	/
	Kg	15.2	15.2	15.2	22	23	26	38	42	69	79	/	/	/
DA4 ϕ263mm	H mm	/	/	/	/	/	/	/	/	/	/	796	824	874
	Kg	/	/	/	/	/	/	/	/	/	/	108	168	248
L		130	150	160	180	200	230	290	310	350	400	480	600	730

Remark:

1. Flange standard: DIN, ANSI, JIS, GB, JB
2. Accessories dimensions:
   DT–I heat sink: 181mm
   DT–II heat sink: 212mm
   FJC extension (T > 140℃, DN150–250)
   DN150 304 mm
   DN200 504 mm
   DN250 804 mm

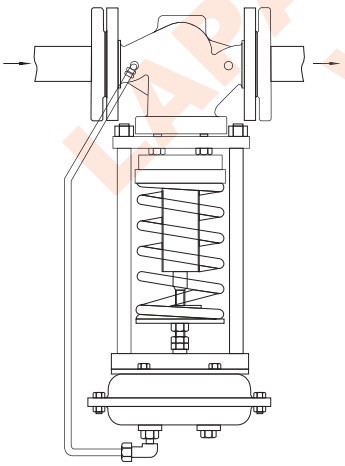


DA6 DN15–125

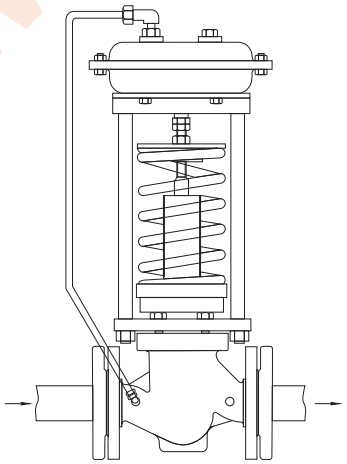


DA4 DN150–250

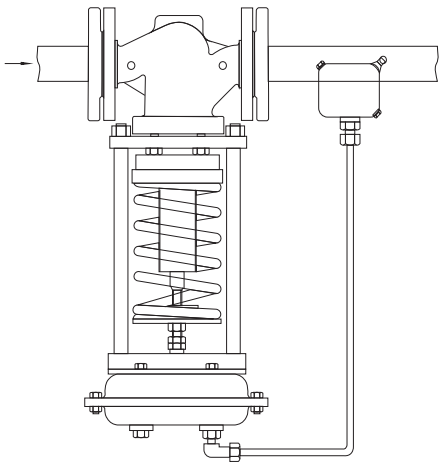
Installation Drawing



Control the liquid pressure



Control the gas pressure



Control the steam pressure