

# Pneumatic 2 Way Control Valve

# INSTRUCTION MANUAL



**dc DELCO**

Specialized Control Valve Manufacturer

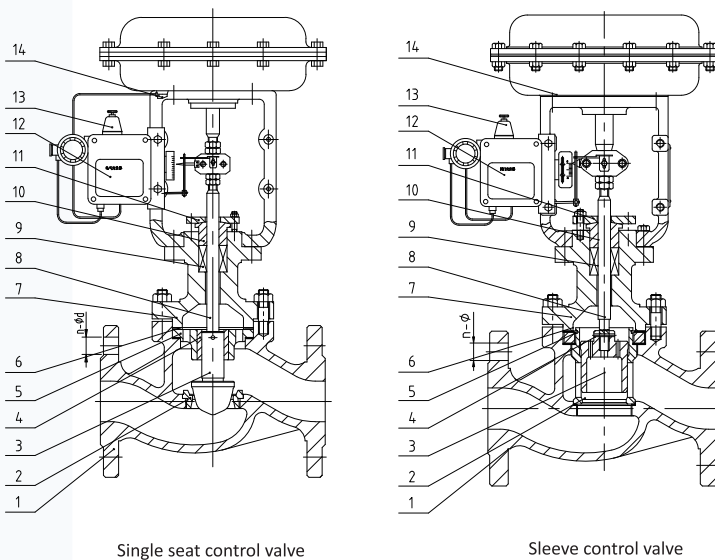


## Introduction

Pneumatic control globe valve is a type of valve that precisely controls the displacement of the valve core through pneumatic actuators to achieve flow, pressure, or temperature regulation. It is suitable for industrial systems that require high-precision process control. Pneumatic diaphragm or piston actuator (single acting/double acting), standard valve positioner (supporting 4-20mA or HART signals). Angle or straight through structure, made of cast steel, stainless steel or alloy steel (such as WCB, CF8M). Cone shaped, needle shaped, or V-shaped port design, with surface overlay of Stellite alloy to enhance wear resistance. Metal hard seal (high temperature and high pressure) or soft seal (PTFE/graphite), with a leakage rating of ANSI IV.

## Main Parts Materials

UNIT:mm



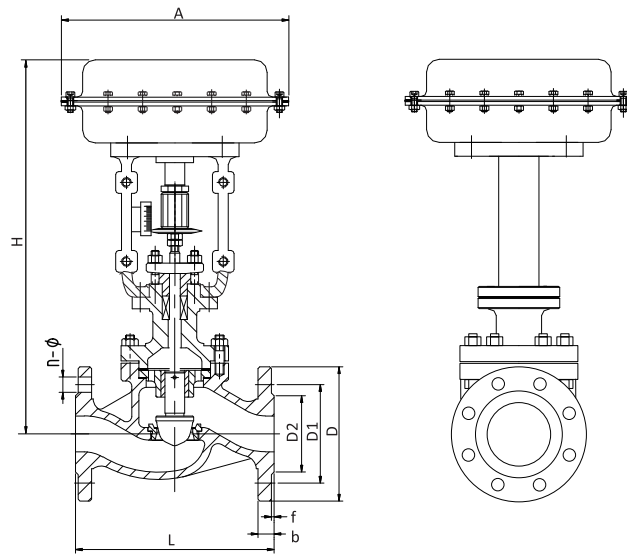
NO.	Part Name	Material
1	Body	WCB/SS304/SS316
2	Seat	SS304/SS316
3	Spool	SS304/SS316
4	Guide Sleeve	20Cr13
5	Guide Sleeve Seat	45
6	Gasket	Metal winding gasket
7	Cap	WCB/SS304/SS316
8	Stem	SS304/SS316
9	Packing	PTFE
10	Packing Cap	20Cr13
11	Gland	WCB/SS304/SS316
12	Positioner	
13	Air set	
14	Actuator	

## Technical performance index table

Technical Performance	Without Positioner	With Positioner
Basic Error	±5%	±1%
Back Difference	3%	1%
Dead Zone	3%	0.4%
Leakage	Rated capacity 10 of single seat valve (capacity 10 of sleeve valve)	
Rated flow coefficient	±10%	
Inherent flow characteristics	Slope ±30%	

### Specification and Technical Logarithm Table

Nominal Diameter		G $\frac{3}{4}$ "	20		25	40		50	65	80	100		150		200		250	300													
Valve Seat Diameter		3 4 5 6 7 8	10	12	15	20	20	25	25	32	40	32	40	50	40	50	65	50	65	80	65	80	100	100	125	150	125	150	200		
Limited Data Coefficient Kv	straight line	0.08 0.12	1.8	2.8	4.4	6.9	6.9	11	11	17.6	27.5	17.6	27.5	44	27.5	44	69	44	69	110	69	110	176	176	275	440	275	440	690	1000	1600
	Equal percentage	0.20 0.32																													
		0.50 0.80	1.6	2.5	4	6.3	6.3	10	10	16	25	16	25	40	25	40	63	40	63	100	63	100	160	160	250	400	250	400	630	900	1440
Rated stroke		10	16			25			40			60			100																
Effective area of film		220	220			560			900			1400																			
Inherent flow characteristics		Linear, Equal percentage																													
Inherently adjustable ratio		50:1																													
Nominal pressure		0.6 1.6 4.0 6.4(ANSI150 300 600Lb)(J510 20 30 40K)																													
Working temperature		-20~+200 -40~+250 -40~+450 -60~+450																													
Ambient temperature		-40~+85																													
Air pressure		0.14(0.25 0.4)																													
Spring range		20~100(40~200 80~40 20~60 60~100)																													
Take over size		Female Threaded M10X1																													

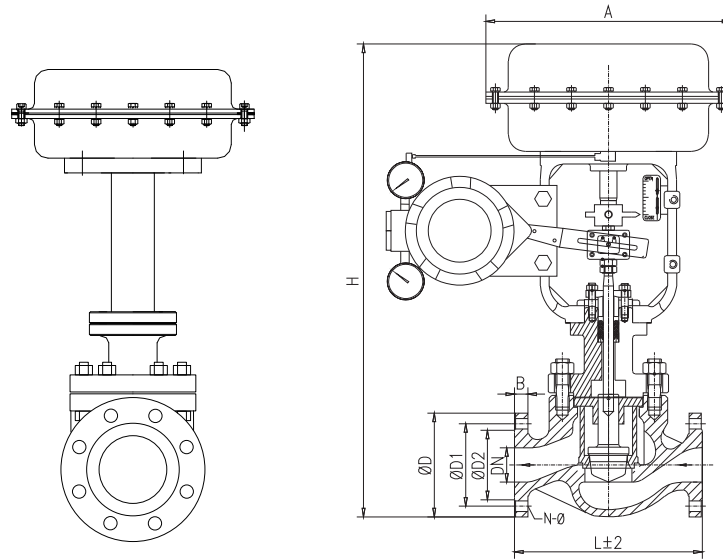


### Main Outline and Connecting Size 1.6MPa

MEDLE	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200
G	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"
D2	45	58	68	78	88	102	122	138	158	188	212	268
D1	65	75	85	100	110	125	145	160	180	210	240	285
D	95	105	115	140	150	165	185	200	220	250	285	340
b-f	14-2	18-2	18-2	18-2	18-2	18-2	18-2	20-2	20-2	22-2	22-2	24-2
n-d	4-14	4-14	4-14	4-18	4-18	4-18	8-18	8-18	8-18	8-18	8-22	12-22
L	180	184	184	200	222	254	276	298	352	410	451	600
H	394	394	396	402	437	451	607	613	631	736	778	810
A	285	285	285	285	285	285	360	360	360	360	470	470

### Main Outline and Connecting Size ANSI 150LB

MEDLE	DN25	DN30	DN40	DN50	DN65	DN80	DN100
G	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
D2	50.8	63.5	73	92.1	104.8	127	157.2
D1	79.4	88.9	98.4	120.7	139.7	152.4	190.5
D	110	115	125	150	180	190	230
b-f	9.6-2	11.2-2	12.7-2	14.3-2	15.9-2	17.5-2	22.3-2
n-d	4-16	4-16	4-16	4-19	4-16	4-19	8-19
L	185	222	222	255	275	298	352
H	394	402	402	437	607	613	631
A	285	285	285	285	360	360	360



### Main Outline and Connecting Size 1.6MPa

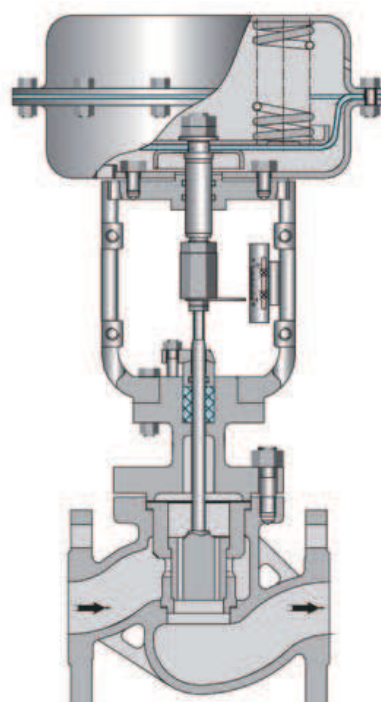
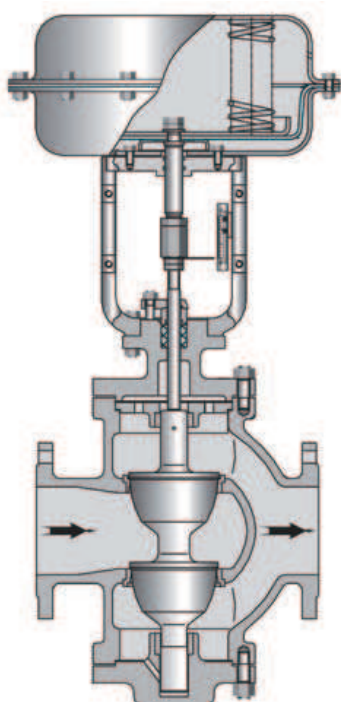
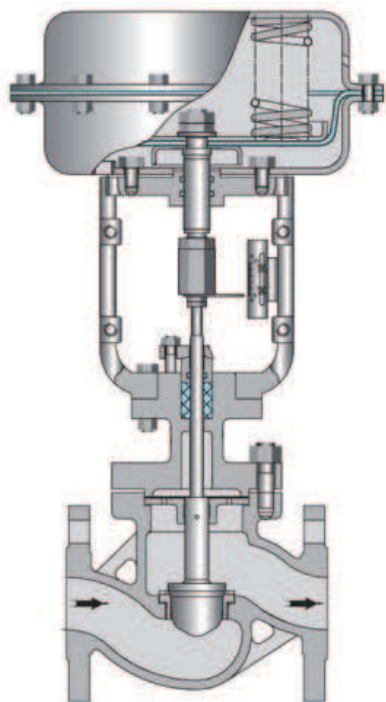
MEDLE	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300
<b>G</b>	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
<b>D2</b>	45	55	66	76	88	102	122	138	158	188	212	268	320	378
<b>D1</b>	65	75	85	100	110	125	145	160	180	210	240	295	355	410
<b>D</b>	95	105	115	140	150	165	185	200	220	250	285	340	405	460
<b>b-f</b>	16-2	16-2	18-2	18-2	18-2	20-3	20-3	20-3	22-3	22-3	22-3	24-3	26-3	28-3
<b>n-d</b>	4-14	4-14	4-14	4-18	4-18	4-18	8-18	8-18	8-18	8-18	8-22	8-22	12-26	12-26
<b>L</b>	180	180	188	200	220	252	275	300	350	410	452	610	650	730
<b>H</b>	560	570	580	620	640	660	740	750	770	880	1060	1150	1260	1320
<b>A</b>	285	285	285	285	285	285	350	350	350	470	470	470	580	580

### Main Outline and Connecting Size ANSI 150LB

MEDLE	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300
<b>G</b>	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
<b>D2</b>	34.9	42.9	50.8	63.5	73	92.1	104.8	127	157.2	185.7	215.9	269.9	323.8	381
<b>D1</b>	60.3	69.9	79.4	88.9	98.4	120.7	139.7	152.4	190.5	215.9	241.3	298.5	362	413.8
<b>D</b>	90	100	110	115	125	150	180	190	230	255	280	345	405	485
<b>b</b>	11.5	13	14.5	16	17.5	19.5	22.5	24	24	24	25.5	29	30.5	32
<b>f</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>n-d</b>	4-16	4-16	4-16	4-16	4-16	4-19	4-19	4-19	8-19	8-22	8-22	8-22	12-25	12-25
<b>L</b>	180	180	188	200	220	252	275	300	350	410	452	610	650	730
<b>A</b>	285	285	285	285	285	285	350	350	350	470	470	470	580	580

## Product Overview

Pneumatic diaphragm regulating valve with the top guide structure, compact structure, Fluid channels in a s-shaped streamline, small pressure drop loss large flow, wide adjustment range, high precision flow characteristics. Regulating valve with multi-spring diaphragm actuator, with small structure, large output force.



Single Seat Adjustment Valve

Double Seat Adjustment Valve

Double Seat Adjustment Valve

### Valve Body

Type	Single seat, double seat, sleeve
Nominal Diameter	DN20-DN200
Nominal Pressure	PN16, PN25, PN40, PN63, PN100
Connection	Flange, thread, weld (Or other customer specified)
Sealing Surface	PN16 convex surface, PN40, PN63, PN100concave surface
Material	WCB,304,316,316L
Structure	Standard type (-20°C ~+200°C) Low temperature type (-60°C ~-196 °C) Cooling type(-40~450°C) Bellows seal type
Gland type	Press Plate
Packing	V type PTFE, Flexible Graphite

### Valve components

Core Type	single seat plunger type
Core Seat	304.316+ SLT
Flow Characteristics	Equal percentage, linear, quick-opening
Air to close FO (With direct action actuator), when the air supply failure, actuator spring open the valve Air to open FC (With reverse action actuator) When the air supply failure, actuator spring close the valve	

### Performance

Rated KV Valve	Reference Table
Flow Characteristics	Linear, equal percentage, quick opening
Adjustable Range	50:1
Metal Seal	Less than 0.01(ANSI B16.104-1976IV)
Soft Seal	Less than 0.00001%
Hysteresis	Less than full stroke 1% (With locator) Less than fullstroke 3%~5%(Without locator)
Basic Error	Less than full stroke ± 1% (With locator) Less than fullstroke:5%(Without locator)

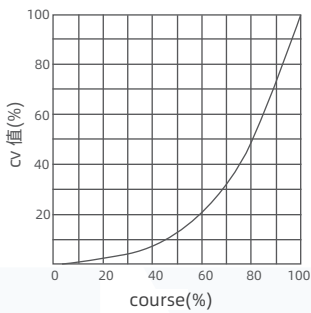
### Actuator

Type	Multi-spring diaphragm actuator
Action Type	Direct action, reverse action
Diaphragm Material	NBR rubber reinforcing polyester fabric
Spring Range	20~100KPa,40~200KPa,80~240KPa
Supply Pressure	0.4~0.5MPa

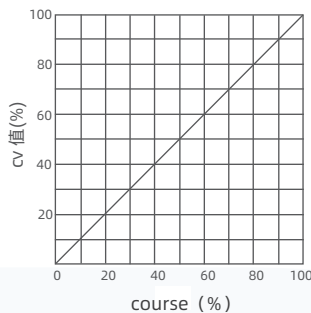
### Accessories(Configured according to requirements)

locator, air filter pressure-re lie f valve, hand wheel de vice, limitswitch, solenoid valve, lock up valve and others.

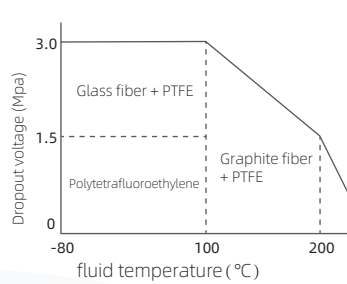
## Flow Rate Characteristic Curve



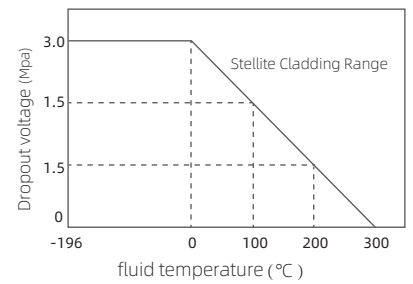
Equal Percentage Flow Characteristics



Linear properties



Soft Seal Seat Operating Temperature and Differential Pressure Range

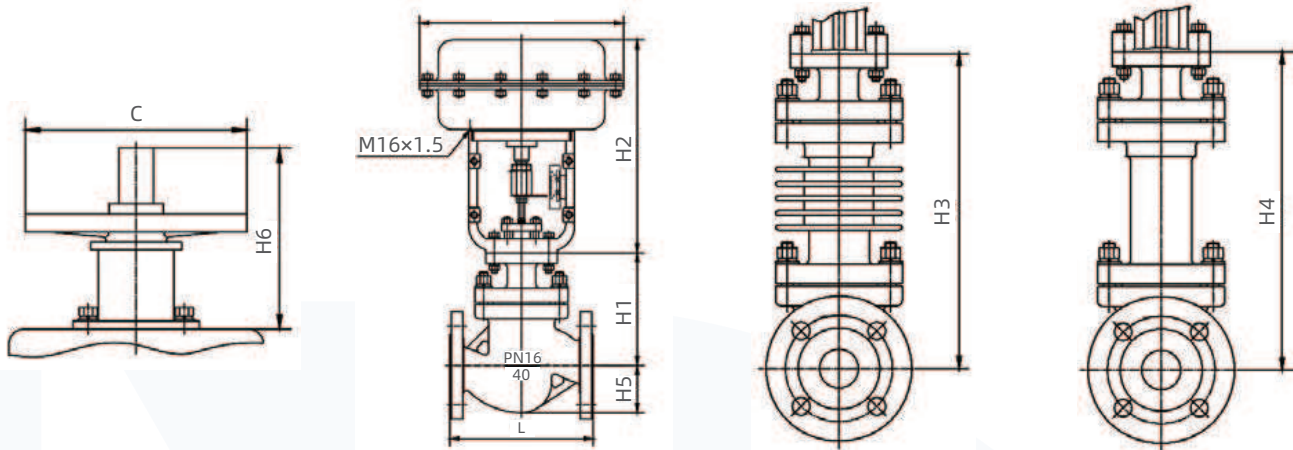


Stellite alloy working range

## Rated flow coefficients and travel parameters

CN	Vlave Seat CN	KV		Effective Area	Rated Travel	Air-Open Differential Pressure MPa		Air-Close Differential Pressure MPa	
		Linear	Percentage			Signal Pr: 20-100	Signal Pr: 40-200	Signal Pr: 20-100	Signal Pr: 40-200
						Air Source 0.14MPa	Air Source 0.25MPa	Air Source 0.14MPa	Air Source 0.25MPa
20	5	0.2		1.8	1.6	-	-	-	-
	7	0.5				-	-	-	-
	8	0.8				-	-	-	-
	10	1.8	1.6			5.35	6.4	5.35	6.4
	12	2.8	2.5			3.72	6.4	3.72	6.4
	15	4.4	4			2.38	5.55	2.33	6.4
	20	6.9	6.3			1.34	3.12	1.34	4.01
25	25	11	10			0.86	2.0	0.86	2.57
32	32	17	16			0.75	1.74	0.75	2.24
40	40	27	25	400	25	0.48	1.11	0.48	1.48
50	50	44	40			0.31	0.71	0.31	0.91
65	65	69	16			0.27	0.63	0.27	0.81
80	80	110	100	600	40	0.18	0.42	0.18	0.52
100	100	176	160			0.11	0.23	0.11	0.34
125	125	275	250			0.12	0.28	0.12	0.37
150	150	440	400	1000	60	0.09	0.20	0.09	0.25
100	100	690	630			0.05	0.11	0.05	0.14

## Pneumatic Membrane Adjustment Valve Dimensions



With Handwheel

Standard Type

High Temperature Heat Dissipation Type

Bellows Sealed Type

DN	L		A	H1		H2	H3		H3		H3		C	H6
	PN16/40	PN63/100		PN16/40	PN63/100		PN16/40	PN63/100	PN16/40	PN63/100	PN16/40	PN63/100		
20	150	230	282	126	138	271	286	298	286	298	43	49	220	180
25	160	230	282	126	138	271	286	298	286	298	48	54	220	180
32	180	260	308	134	142	297	302	310	302	310	57	61	220	180
40	200	260	308	157	165	297	325	333	325	333	66	70	220	180
50	230	300	308	167	187	297	335	345	335	345	80	84	220	180
65	290	340	395	199	204	375	427	442	437	442	92	97	265	240
80	310	380	395	214	219	375	452	457	452	457	100	105	265	240
100	350	430	395	229	240	375	467	478	467	478	120	125	265	240
125	400	500	498	263	280	455	524	541	654	671	134	138	315	304
150	480	550	498	293	300	455	554	561	684	691	156	163	315	304
200	600	650	498	358	364	455	619	625	749	755	199	206	315	304

Standard Overall Height = H5+H1+H2 , Total height of high-temperature heat dissipation type = H5+H1+H3  
 Total height of bellows seal = H5+H1+H4

## Pneumatic Membrane Single Seat Adjustment Valve Weight Table

DN		20	25	32	40	50	65	80	100	125	150	200
Standard Type	PN16	17	18	23	26	29	52	62	95	115	152	235
	PN40	18	19	25	27	32	56	68	115	140	165	295
	PN64	25	27	35	41	45	69	78	155	190	255	355
High Temperature Heat Dissipation Type		18	19	25	27	32	56	68	75	120	148	325
Bellows Sealed Type		18	19	25	27	32	56	68	75	120	148	325
Low Temperature		25	27	30	33	39	59	68	85	150	210	335

KG

# Seeking For Global Distributors



**dc DELCO**

Specialized Control Valve Manufacturer



**DELCO VALVE CO.LTD**

Phone: +86-159 8960 2972

Website: [www.delcofluid.com](http://www.delcofluid.com) / [www.delcovalves.com](http://www.delcovalves.com) / [www.delcovalve.ru](http://www.delcovalve.ru)

E-mail: [sales@delcofluid.com](mailto:sales@delcofluid.com)

Address: Building 8A#, Tiansheng Industrial Park, Wanjiang Street, Dongguan, China

