

Pneumatic Three-Way Regulating Valve

INSTRUCTION MANUAL



dc DELCO

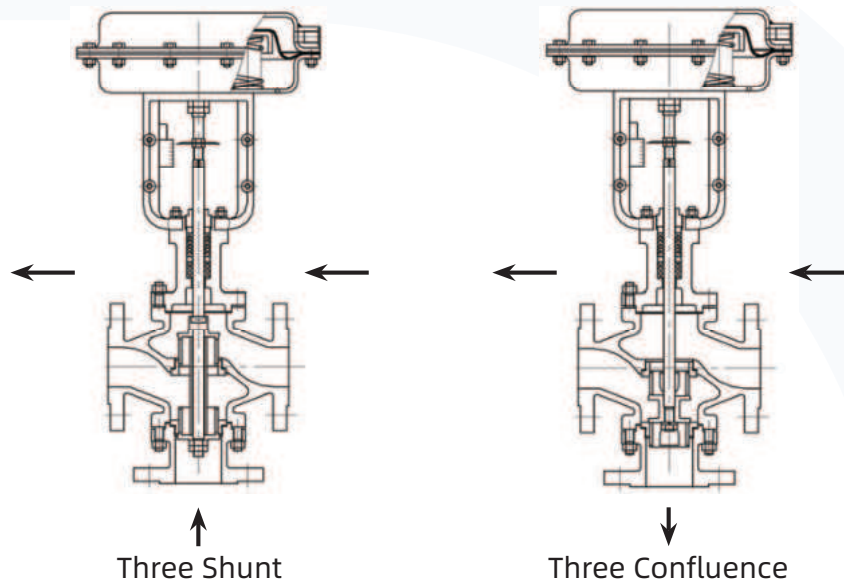
Specialized Control Valve Manufacturer



Introduction

Pneumatic three-way regulating valve is a multi-path valve driven by pneumatic actuator, mainly used for precise adjustment of parameters such as flow rate, pressure, temperature or liquid level of fluid media (such as gas, liquid, steam). Its core function is to achieve automated control of process parameters by diverting, merging, or mixing two fluids. Split type: Divide a fluid into two outputs (such as splitting cooling water). Confluence type: Mixing two fluids into one output (such as acid-base neutralization reaction) actuator: Multi spring pneumatic thin film actuator (such as ZHA/B type), powered by compressed air, receives 4-20mA or 0-10mA signals through an electric pneumatic valve positioner, and converts them into valve stem displacement.

Main Parts Materials



Technical performance index table

Technical Performance			Without Positioner	With Positioner
Basic Error			±6	±1.5
Back Difference			5	1.5
Dead Zone			4	0.6
Always Point Deviation	Open	Starting	±2.5	±1.5
		End	±6.0	
	Close	Starting	±6.0	
		End	±2.5	
Rated Stroke Deviation			±2.5	
Allowable Leakage			10^{-3} x Rated capacity of valve	

Specification and Technical Logarithm Table

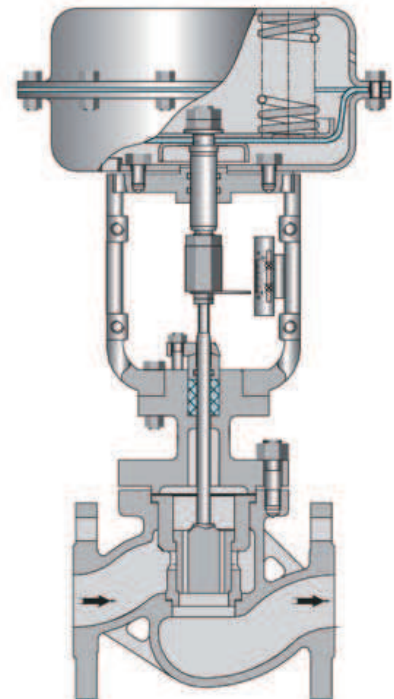
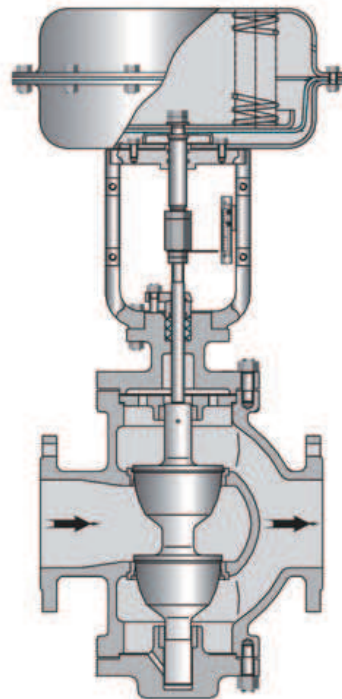
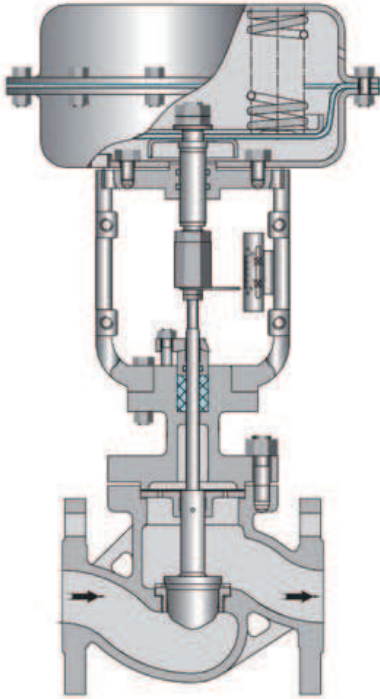
Nominal Diameter	Confluence	25	32	40	50	65	80	100	125	150	200	250	300
	Diversion						80	100	125	150	200	250	300
Limited Data Coefficient KV	Confluence	8.5	13	21	34	52	85	135	210	340	535	800	1260
	Diversion						85	135	210	340	535	800	1260
Rated Stroke		13		25			40			60			100
Effective Area		400		400			630			1000			1600
Nominal Pressure		0.6 1.6 4.0 6.4 (ANSI 150 300 600Lb) (JIS 10 20 30 40K)											
Flow Characteristics		Straight Line											
Medium Temperature		-20~200°C -40~250°C -40~315°C											
Flange Size		Cast iron flange size according to JB77-59, Cast steel flange size according to JB79-59											
Flange Form		Flange sealing face form press JB77-59, Base cast iron flanges are smooth and cast steel flanges are concave											
Body Material		SS304, SS316, SS316L, WBC											
Spool Material		1CR18NI9TI											
Upper Bonnet Type		Normal type (normal temperature type), hot piece type (high temperature type)											
Spring Range		20-100; 40-200; 80-240											
Adjustable		30: 1											

Dimension

Size	Confluence										Diversion							
	Journey	D	L			H		H1			L			H		H1		
			PN MPa			Normal	High	PN MPa			PN MPa			Normal	High	PN MPa		
			1.6	4.0	6.4			1.6	4.0	6.4	1.6	4.0	6.4			1.6	4.0	6.4
25	16	325	185	190	200	615	763	140	150	150	185	190	200	615	763	140	150	150
32	16	325	200	200	210	622	773	150	160	170	200	200	210	622	773	150	160	170
40	25	325	220	220	235	625	776	160	170	180	220	220	235	625	776	160	170	180
50	25	325	250	255	265	640	791	180	190	200	250	255	265	640	791	180	190	200
65	40	410	275	285	295	861	1024	200	210	220	275	285	295	61	1024	200	210	220
80	40	410	300	310	320	879	1042	210	230	240	300	310	320	85	1050	210	230	240
100	40	410	350	360	370	873	1036	220	250	260	350	350	370	900	1060	220	250	260
125	60	495	410	430	440	1029	1244	260	300	300	410	425	440	1050	1265	260	300	300
150	60	495	450	465	475	1046	1261	280	320	320	450	460	475	1060	1275	280	320	320
200	60	495	550	560	570	1075	1290	320	380	380	550	560	570	1105	1320	320	380	380
250	100	600	635	660	670	1451	1320		474	474	635	660	670	1525	2800		474	474
300	100	600	720	740	770	1512	1560		584	584	720	740	770	1545	2820		584	584

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)

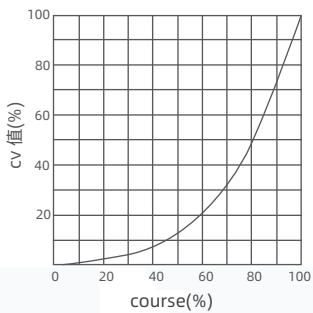
Actuator

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

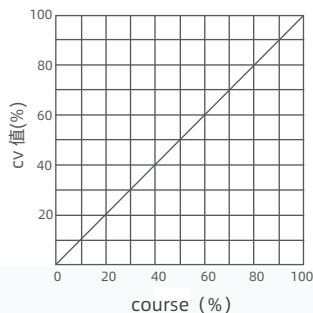
Accessories(Configured according to requirements)

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

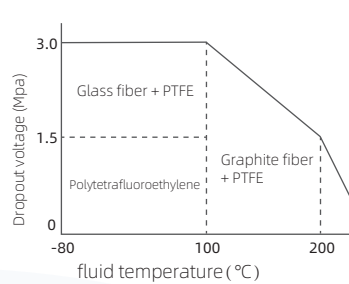
Flow Rate Characteristic Curve



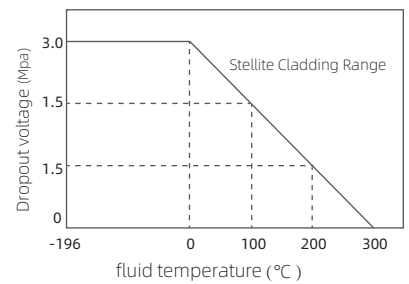
Equal Percentage Flow Characteristics



Linear properties



Soft Seal Seat Operating Temperature and Differential Pressure Range

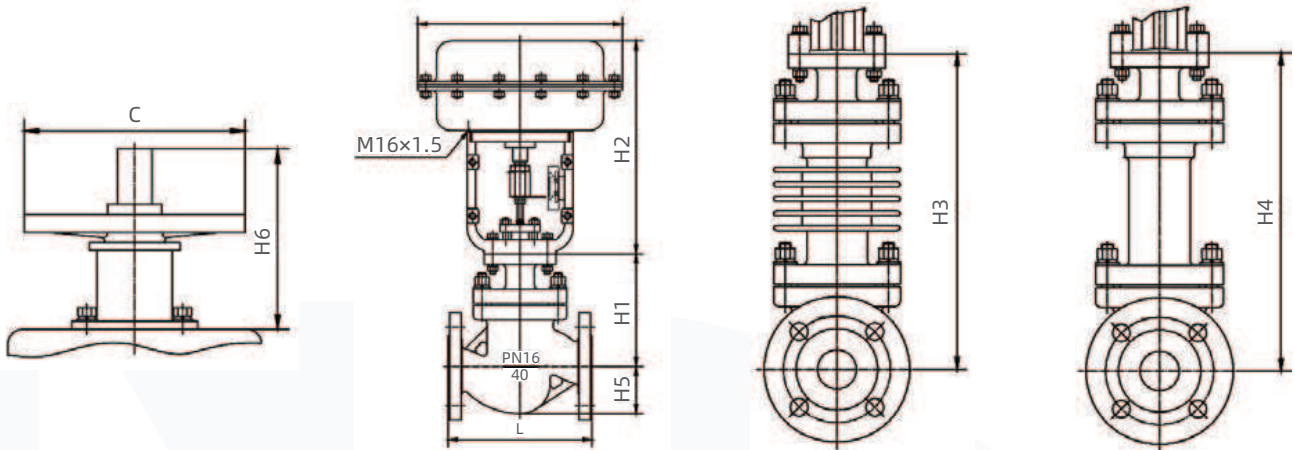


Stellite alloy working range

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



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