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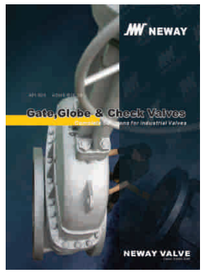

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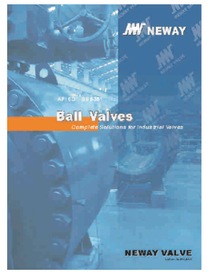

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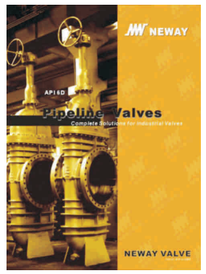

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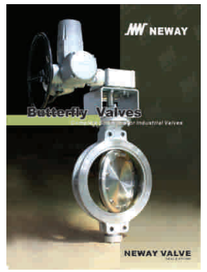

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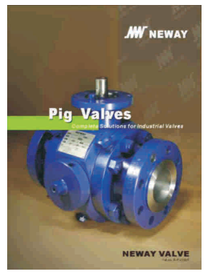
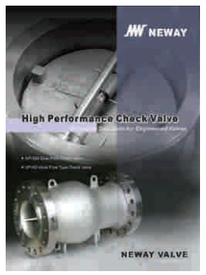


Cat.no.:E-PV

Cat.no.:E-AV

Cat.no.:6AGV



Cat.no.:E-HPCV

Cat.no.:E-WE

Cat.no.:E-CSS

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Cat.no.:E-CSC-2011

NEWAY

Cage-guided Control Valve

Complete Solutions for Engineered Valves

NEWAY VALVE

Cat.no.:E-CSC-2011

Table of Contents

Introduction

Cage-guided Control Valve

Complete Solutions for Engineered Valves

Being one of the leading valve manufacturer in the world, Neway specializes exclusively in the development of innovative designs, through intensive R&D programs and engineering excellence. We engineer and manufacture valve solutions for all industries.

Neway's main product lines include Gate, Globe, Check, Butterfly and Ball valves. Our production facilities and quality system have been inspected and approved by many global end users and EPC firms. Our products have been installed around the world, handling a wide variety of applications in the Gas, Oil, Refining, Chemical, Marine, Power Generation and Pipeline Transmission Industries.

Neway Facilities

Neway's management groups are structured based on operating several plants. Neway valves are manufactured in 6 specialized manufacturing facilities, 4 plants in China, one in Mexico and the other in Saudi Arabia. They are all supported by two Neway owned specialized foundries.

Our intranet includes over 400 computers using the most advanced R&D software including CAD, I-Deas, Pro-E, a number of CNC & machine centers , in addition we utilize a bar code inventory management systems. We are one of the few valve manufacturers performing Enterprise Resource Planning (ERP), in-house fire safe and cryogenic testing, high pressure gas and low fugitive emission testing.

Quality Assurance

Neway's quality assurance is dedicated to the pursuit of zero defect valve supply to our customers. We have implemented a six sigma management process in order to continually improve our processes and management controls through the use of advanced statistical data analysis. Neway holds most of the industrial valve manufacturing certificates, such as ISO 9001, CE/PED, TA-Luft, API 6A, API 6D, ABS, and API 607 Fire Safe certificate.

Quality Commitment

Neway recognizes the importance of valve quality for the safety and protection of personnel health and property. It is our quality commitment to focus our resources to provide our customer's with first class products at a competitive price, that are designed, manufactured, inspected and tested in accordance with our customer's specifications and that comply with all international standards.

With respect to the facts that the current industrial standards do not always take into consideration the likelihood and consequences of possible deterioration in service, related to specific service fluids or the external environment in which they operate. Our customers are requested to keep an open line of communication with our engineering department to identify and implement standards, that will provide valves with the possibility of deterioration in service, so as to ensure safety over the valves expected lifetime.

Confirmation of technical parameters

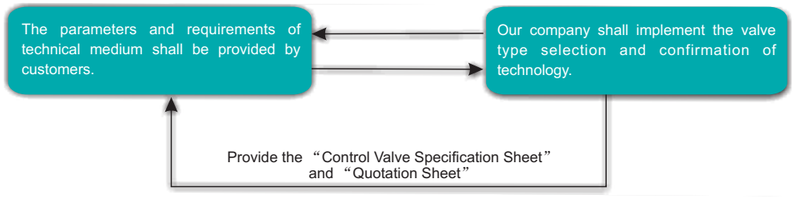
The global control valves (straight-through type)of our company include three types: CSS single-seated control valves, CSC cage-guided control valves, CSM multi-stage pressure reducing control valves, which may be selected for use by users according to the actual demand. This stylebook intends to introduce the CSS single-seated control valves.

CSS

Single-seated control valve

Confirmation of technology shall be carried out before ordering, with the purpose to ensure that the control valves provided by our company are in full appliance with the requirements of customers.

The specific procedure: The parameters and requirements of technical medium provided by customers, after the valve type selection and calculation for confirmation, shall be worked to “Control Valve Specification Sheet” which shall be provided to the customers for confirmation, then continue the quotation and the next business processes.



The parameters and requirements of technical medium provided by customers are as follows:

1) Fluid Name, Fluid state
2) Inlet Pressure, Outlet pressure
3) Normal flow, Minimum flow, Maximum flow
4) Fluid operating temperature, density and viscosity
5) Pipeline specification，material, installation direction (Horizontal or vertical)
6) Confirm the driving means of valve: electric drive or pneumatic drive, or other means
7) Confirm that the control valve is used for regulation or on-off and shutting off
8) Confirm the requirements of the flow characteristics of valves (With the exception of the valves for on-off use)
9) Confirm the mode of action of the valve
10) Confirm whether the valve is equipped with hand-operating mechanism
11) Confirm the leakage rating at the closure of the valve
12) Confirm the protection or explosion-proof grade
13) Special specifications or requirements

The special specifications or requirements are as follows:

1) Oil prohibition treatment of valve body
2) Specifications of the vapor jacket of valve body
3) Valve stem bellow seal
4) Radioactive survey of valve body
5) Flow characteristic inspection of valve body
6) Low-temperature test of valve body
7) Ambient temperature≤-30℃
8) Ambient temperature≥60℃
9) Treatment for strongly corrosive environment
10) Special requirements of on-off switching speed
11）Copper prohibition treatment
12）Designated coating
13）Other special requirements

How to order

Pattern of specification

Control Valve Specification Sheet

	Customer			Name of Valve			
	Plant			Code No.			
	Tag.no.			Quotation No.			
	Purpose			DWG. No.			
	Quantity			Manufacturing Sn.			
Valve Body	Code		☐	Valve Body			☐
	Size		☐	Valve Plug			☐
	Rating		☐	Valve Seat			☐
	Connection		☐	Guide Sleeve			☐
	Trim Form		☐	Gland Packing			☐
	Character		☐				☐
	Bonnnet		☐				☐
	Rated Cv	Travel	mm ☐				☐
Actuator	Code		☐	Supply			☐
	Output Force		☐	Connection			☐
	Action Type		☐				☐
	Spring Range		☐				☐
	Handwheel		☐				☐

Accessories	Name	Mode And Specification	Connection		Name	Mode And Specifications	Connection	
	Electro-pneumatic Positioner			☐				☐
	Filter Reducing Valve			☐				☐
	Solenoid Valve			☐				☐
	Limit Switch			☐				☐
	Speed-up Relay			☐				☐
	Lockup Valve			☐				☐

Action・capability						
	Signal		☐	Leakage class		☐
	Supply		☐	Action speed		☐
	Action		☐	Mounting means		☐
	Failure		☐	Ambient temperature		☐
	Oil-free		☐	Line direction		☐
	Painting		☐	Dimension of connection tube		☐
	Other		☐	Material of connection tube		☐

Service Condition・calculation		Unit	Minimum	Normal	Maximum	Name of Fluid	
	Flow Rate	Kg/h				State	
	Inlet Pressure	kPaG				Remark	
	Outlet Pressure	kPaG					
	Shutoff Pressure	kPa					
	Operating Temperature	℃					
	Viscosity	Pa・s					
	Density	Kg/m³					
	Cal.cv						
	Opening	%					
	Noise	dBA					

Compiling		
Confirming		
Approving		

NEWAY

Neway reserve the right of modifying design, material and specification without advance notice, and the obligation of modification for none supplement or arrangement to sold-out product.

Design feature of the CSC cage-guided valve

CSC control valve is a single seat and high-precision valve with the following design features:

- CSC cage-guided control valve is a cage-guided and high-precision valve with the following design features:
- Use S-shape interval channel with constant section, the slight flow resistance and strong flow capacity.
- The movements of the valve plug up and down are guided by the cage travel smoothly.
- The valve plug and cage constitute a pressure-balanced structure which with wide adjustable range and high adjusting.
- Precision and applies to the working condition with higher pressure drop.
- The valve plug and cage are sealed with floating seal ring with slight sealing resistance and good sealability.
- Pneumatic actuating mechanism is a multi-spring diaphragm type with compact structure and strong output force.
- Electric actuator is an electronic electric actuating mechanism with one-piece structure and powerful functions.
- Apply to the control fluid with various pressure and temperature.

Design reference standard of the CSC cage-guided control valve

- ASME B16.34-1996 Valves-Flanged, Threaded, and Welding End.
- ASME B16.104 Seat Leakage of Control Valves
- IEC 60534-2-4-1989 Part 2 Flow Rate-Section 4: Inherent Flow Characteristics and Rangeability
- IEC 60534-3-1976 Part 3 Dimension-Section 1: Structure Length of Flanged Connecting Two-way Global Control Valves
- GB/T4213-92 Pneumatic control valves
- JB/T 5296-91 General Test Methods of Flow Coefficient and Flow Resistance Coefficient of Valves
- API 598-1996 Inspection and Tests of Valves (Domestic Standard Reference GB/T 13927-1992)
- ISO 5208-2004 Pressure test of Industrial Valves (Domestic Standard Reference JB/T 9092-1999)

Main performance index of the CSC cage-guided control valve

- Intrinsic error: ±2%（with localizer）;±5%（without localizer）
  ±1%（electronic actuator）
- Hysteresis error: 1%（with localizer）; 3%（without localizer）
  ±0.8%（electronic actuating mechanism）
- Hysteresis: 1%（with localizer）; 5%（without localizer）
  1%（electronic actuating mechanism）
- Rangeability: R=50
- Leakage class：ANSICLASS IV (rated Cv×0.01%)
  ANSICLASS V 、VI (hard sealing, optional)
  ANSICLASS VI (soft sealing)
- Flow characteristics: equal percentageage, linearity and quick-opening
- For the details of rated Cv value and allowable pressure drop, please see the content later.

Manufacturing scope of the CSC cage-guided control valve

Pressure Rating:ANSI Class150lb、300lb、600lb												
British unit	Inch	1-1/2	2	3	4	5	6	8	10	12	14	16
Metric unit	mm	40	50	80	100	125	150	200	250	300	350	400

Pressure rating			
ANSI CLASS	150 Lb	300 Lb	600 Lb
HG20592~20635	1.6 MPa、2.0 MPa	4.0 MPa、5.0 MPa	6.3 MPa 、10 MPa、11 MPa
GB/T9112~9124	1.6 MPa、2.0 MPa	4.0 MPa、5.0 MPa	6.3 MPa 、10 MPa、11 MPa
JIS	10K	20K、30K	40K

Applicable temperature range				
Temperature range	-17℃ ~ 230℃	-45℃ ~ -17℃ or >230℃ ~ 566℃	-45℃ ~ -100℃	-100℃ ~ -196℃
Bonnet type	Standard type	Extension type	Long type	low temperature type

Notice: When the temperature of fluid medium is below -45℃, it should confirm the length of bonnet and the connection dimension between the bonnet and thermal container with customers.

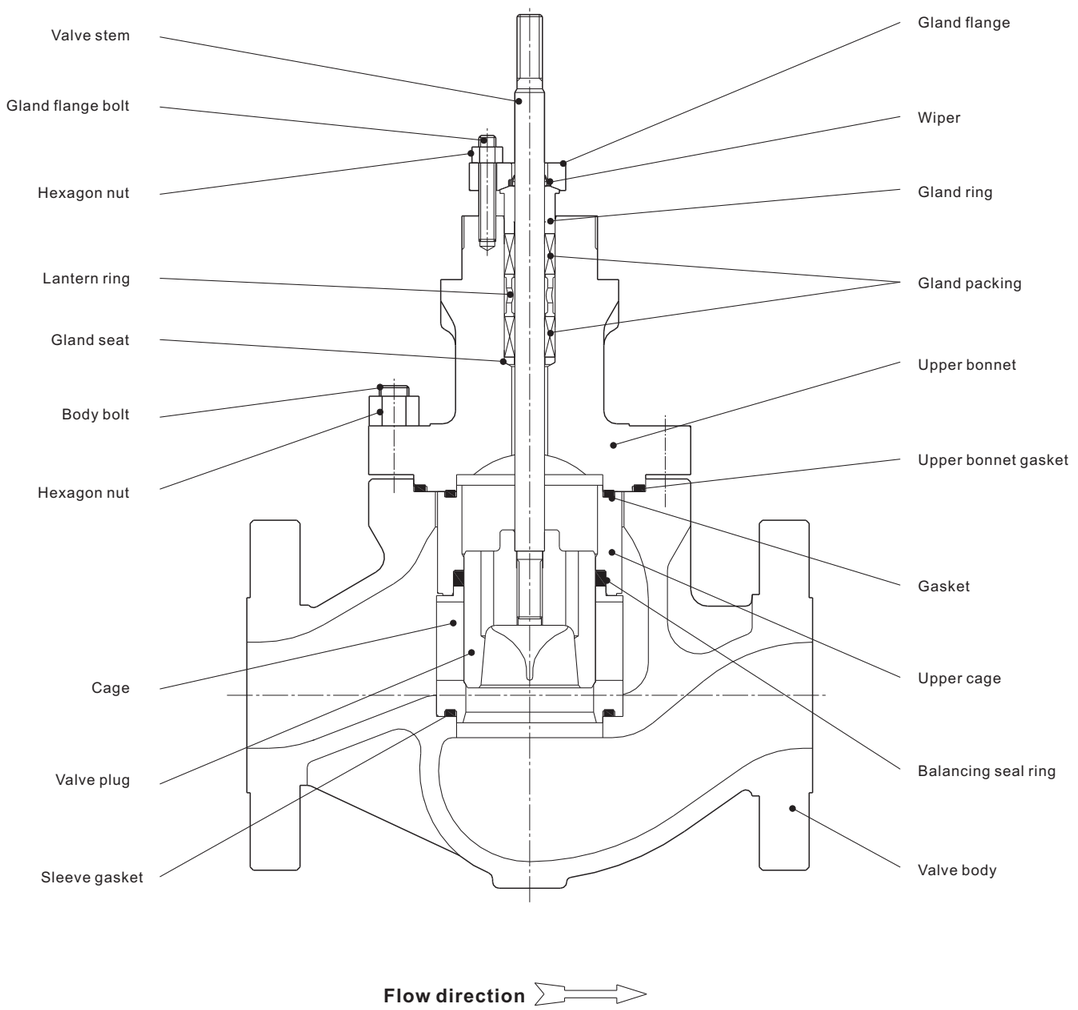
Connection mode

Connection mode	Sealing face type	Abbreviated code of sealing face	Code of Neway
Flange end	Flat face end	FF	F
	Raised face end	RF	R
	Female flanged end	MF	LF
	Male flange end	MM	LM
	RTJ end	RTJ	J
Welded end	Butt welding end more than 3"	BW	B
	Socket welding end (equal to or less than 2")	SW	S

Coating

Standard painting color of carbon-steel valve: RAL9006 silvery white the stainless steel valve body part shall not be painted.
The original color of electric actuator shall be kept, unless there are special requirments.
With the special requirements, customers may designate the type and color of the paint.
The color of the pneumatic actuator:RAL5015 blue.

Standard structure of valve body



Flow direction

Rated Cv value, Travel

Nominal pipe size		Valve plug dimension		Rated Cv	Travel
mm	in	mm	in	---	mm
40	1-1/2	25	1	20	20
		32	1-1/4	30	20
		40	1-1/2	40	25
50	2	32	1-1/4	30	20
		40	1-1/2	40	25
		50	2	70	30
80	3	50	2	70	30
		65	2-1/2	110	40
		80	3	140	40
100	4	65	2-1/2	110	40
		80	3	140	40
		100	4	200	50
150	6	100	4	200	50
		125	5	300	60
		150	6	420	60
200	8	125	5	300	60
		150	6	420	60
		200	8	680	80
250	10	200	8	680	80
		250	10	980	90
300	12	250	10	980	90
		300	12	1400	100

Standard Product Material Combination (valve Body To Be Carbon-steel Wcb, Wc6, Lcb)

Material of valve body	WCB、WC6			LCB	
Material and treatment of valve plug	410SS	410SS	410SS	410SS	410SS
Material and treatment of valve seat	316SS/TS	410SS	410SS	316SS/TS	410SS
Materials and treatment of cage	17-4PH	17-4PH	17-4PH	17-4PH	17-4PH
Materials and treatment of seal rings	RPTFE+316SS	RPTFE+316SS	GRAPHITE	RPTFE+316SS	RPTFE+316SS
Range of working temperature	-5℃~+200℃	-5℃~+230℃	-5℃~+425℃	-45℃~+200℃	-45℃~+230℃
Allowable leakage rate of valve seat	CLASS VI	CLASS IV	CLASS IV	CLASS VI	CLASS IV
Figure of temperature pressure	See fig.1	See fig.2	See fig.3	See fig.4	See fig.5

Note: The material grades listed in the above table are ASTM standard, for material of national standard and other standard, just adopt it.
Using temperature and pressure of any material are not allowed to exceed the pressure- temperature rating defined in ASME B16.34;
TS in the table indicate the configuration of embedding intensified PTFE; SS in the table expresses the configuration of partial overlaying welding hard alloy; SF in the table expresses the configuration of entire overlaying welding hard alloy.
If needing material unlisted in the table, please affirm it with the company's Sales Department.

Fig.1

Fig.2

Fig.3

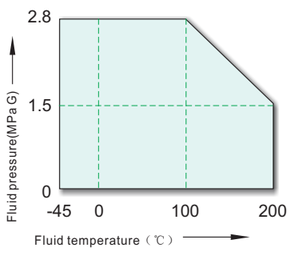


Fig.4

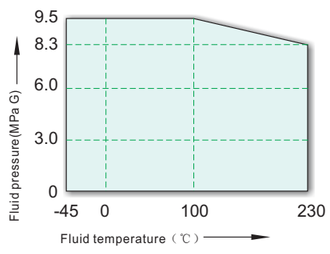


Fig.5

Standard material combination,
Applicable temperature,
Allowable leakage rating

Standard Product Material Combination (valve Body To Be Stainless Steel Cf8/cf8m)

Material of valve body	CF8、CF8M					
Material and treatment of valve plug	316SS	316SS	316SS/SS	316SS/SS	316SS/SS	316SS/SF
Material and treatment of valve seat	316SS/TS	316SS	316SS/SS	316SS/SS	316SS/SS	316SS/SF
Materials and treatment of cage	CF8M/HC	CF8M/HC	CF8M/HC	CF8M/HC	CF8M/HC	CF8M/HC
Materials and treatment of seal rings	RPTFE+316SS	RPTFE+316SS	RPTFE+316SS	UHMW-PE	GRAPHITE	GRAPHITE
Range of working temperature	-75℃~+200℃	-75℃~+230℃	-75℃~+230℃	-196℃~+40℃	-196℃~+538℃	-196℃~+538℃
Allowable leakage rate of valve seat	CLASS VI	CLASS IV	CLASS IV	CLASS IV	CLASS IV	CLASS IV
Figure of temperature pressure	See fig.A	See fig.B		See fig.C	See fig.D	

Note: The material grades listed in the above table are ASTM standard, for material of national standard and other standard, just adopt it.
Using temperature and pressure of any material are not allowed to exceed the pressure- temperature rating defined in ASME B16.34;
TS in the table indicate the configuration of embedding intensified PTFE; SS in the table expresses the configuration of partial overlaying welding hard alloy; SF in the table expresses the configuration of entire overlaying welding hard alloy.
If needing material unlisted in the table, please affirm it with the company's Sales Department.

Fig.A

Fig.B

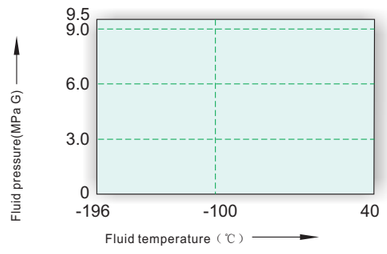


Fig.C

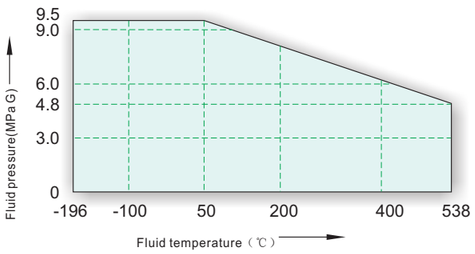


Fig.D

Applicable pressure-temperature range of valve body ---ASME B16.34---2004

Unit：MPa G

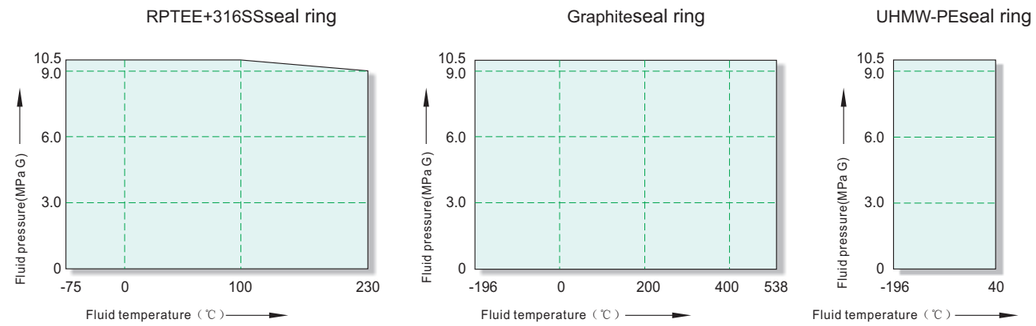
℃	ANSI 150Lb							ANSI 300Lb			
	LCB	WCB	WC6	WC9	C5	CF8	CF8M	LCB	WCB	WC6	WC9
		A105	F11	F22	F5	F304	F316		A105	F11	F22
-196~38						1.90	1.90				
-45~38						1.90	1.90	4.78			
-29~38	1.84	1.96	1.98	1.98	2.00	1.90	1.90	4.80	5.11	5.17	5.17
50	1.82	1.92	1.95	1.95	1.95	1.83	1.84	4.75	5.01	5.17	5.17
100	1.74	1.77	1.77	1.77	1.77	1.57	1.62	4.53	4.66	5.15	5.15
150	1.58	1.58	1.58	1.58	1.58	1.42	1.48	4.39	4.51	4.97	5.03
200	1.38	1.38	1.38	1.38	1.38	1.32	1.37	4.25	4.38	4.80	4.86
250	1.21	1.21	1.21	1.21	1.21	1.21	1.21	4.08	4.19	4.63	4.63
300	1.02	1.02	1.02	1.02	1.02	1.02	1.02	3.87	3.98	4.29	4.29
325	0.93	0.93	0.93	0.93	0.93	0.93	0.93	3.76	3.87	4.14	4.14
350	0.84	0.84	0.84	0.84	0.84	0.84	0.84	3.64	3.76	4.03	4.03
375		0.74	0.74	0.74	0.74	0.74	0.74		3.64	3.89	3.89
400		0.65	0.65	0.65	0.65	0.65	0.65		3.47	3.65	3.65
425		0.55	0.55	0.55	0.55	0.55	0.55		2.88	3.52	3.52
450		0.46	0.46	0.46	0.46	0.46	0.46		2.30	3.37	3.37
475		0.37	0.37	0.37	0.37	0.37	0.37		1.74	3.17	3.17
500		0.28	0.28	0.28	0.28	0.28	0.28		1.18	2.57	2.82
538		0.14	0.14	0.14	0.14	0.14	0.14		0.59	1.49	1.84

℃	ANSI 300Lb			ANSI 600Lb							
	C5	CF8	CF8M	LCB	WCB	WC6	WC9	C5	CF8	CF8M	
	F5	F304	F316		A105	F11	F22	F5	F304	F316	
-196~38		4.95	4.95						9.91	9.92	
-45~38		4.95	4.95	9.57					9.91	9.92	
-29~38	5.17	4.96	4.96	9.60	10.21	10.34	10.34	10.34	9.93	9.93	
50	5.17	4.78	4.81	9.49	10.02	10.34	10.34	10.34	9.56	9.62	
100	5.15	4.09	4.22	9.07	9.32	10.30	10.30	10.30	8.17	8.44	
150	5.03	3.70	3.85	8.79	9.02	9.95	10.03	10.03	7.40	7.70	
200	4.86	3.45	3.57	8.51	8.76	9.59	9.72	9.72	6.90	7.13	
250	4.63	3.25	3.34	8.16	8.39	9.27	9.27	9.27	6.50	6.68	
300	4.29	3.09	3.16	7.74	7.96	8.57	8.57	8.57	6.18	6.32	
325	4.14	3.02	3.09	7.52	7.74	8.26	8.26	8.26	6.04	6.18	
350	4.03	2.96	3.03	7.28	7.51	8.04	8.04	8.04	5.93	6.07	
375	3.89	2.90	2.99		7.27	7.76	7.76	7.76	5.81	5.98	
400	3.65	2.84	2.94		6.94	7.33	7.33	7.33	5.69	5.89	
425	3.52	2.80	2.91		5.75	7.00	7.00	7.00	5.60	5.83	
450	3.37	2.74	2.88		4.60	6.77	6.77	6.77	5.48	5.77	
475	2.79	2.69	2.87		3.49	6.34	6.34	5.57	5.39	5.73	
500	2.14	2.65	2.82		2.35	5.15	5.65	4.28	5.30	5.65	
538	1.37	2.44	2.52		1.18	2.98	3.69	2.74	4.89	5.00	

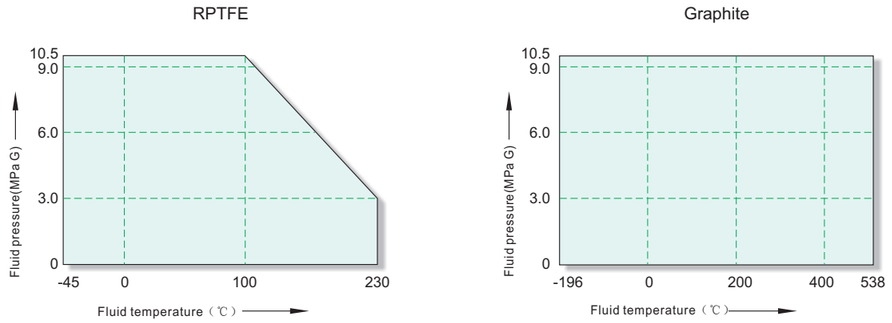
Note: (1) Upon prolonged exposure to temperatures above 425℃, the carbide phase of WCB steel may be converted to graphite.
(2) Flanged end valve ratings terminate at 538℃

Applicable temperature of material
Range of material

Working temperature and pressure of balancing seal ring



Working temperature and pressure range of filler



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Standard specification of electric actuator

Purpose	Drive actuator of straightaway type adjusting valve, on-off valve	
Mode	PSLSeries	361LA Series
Structural features	Full electronic one-piece, built-in servoamp	Full electronic one-piece, built-in servoamp
Voltage	230VAC	220VAC
Repeated precision	±1%	±1%
Lag	2%Sensitivity	0.8~1.0%
Protecting Level	IP65	Ip55
Manual operation	With top type hand wheel	With side type or top type lever
llowable environmental temperatur	-20℃ ~ 70℃	-10℃～60℃
Optional accessories	Limit switch, torque switch, heating resistance, local control box, and special voltage	Overload protective device, built-in heater, pressure-resistant and exploration proof

Note: technical performance of electric actuator is based on product leaving factory, data on the above table for you reference

PSL standard specification of straightway type electric actuator

Standard mode	Thrust Force [KN]	Speed [mm/s]	The Most Travel [mm]	Power [VAC]	Power Cons Umption [VA]	Electromotor Protection	Circuit Connection	Protecting Grade	Weight [Kg]
PSL201MA	1.0	0.25	50	230	25.5	Allow locked rotor	2-M20 × 1.5	IP65	4.25
PSL202MA	2.0	0.50	50	230	37	Allow locked rotor		IP65	4.50
PSL204.1MA	4.5	1.00	50	230	44	Thermoswitch		IP65	5.00
PSL208.1MA	8.0	1.00	50	230	74.2	Thermoswitch		IP65	7.00
PSL210MA	10.0	0.45	50	230	72	Thermoswitch		IP65	7.00
PSL312MA	12.0	0.60	65	230	88	Thermoswitch	3-M20 × 1.5	IP65	10.00
PSL314MA	14.0	0.35	65	230	77	Thermoswitch		IP65	10.00
PSL320MA	20.0	1.00	100	230	100	Thermoswitch		IP65	20.00
PSL325MA	25.0	1.00	100	230	100	Thermoswitch		IP65	20.00

361L standard specification of straightway type electric actuator

Standard mode	Thrust Force [KN]	Speed [mm/s]	The Most Travel [mm]	Power [VAC]	Power Cons Umption [VA]	Electromotor Protection	Circuit Connection	Protecting Grade	Weight [Kg]
361LSA-08	0.8	4.2	30	220	45	Overheating protection	2-PF1/2	IP55	8.0
361LSA-20	2.0	2.1	30	220	50	Overheating protection		IP55	8.0
361LSB-30	3.0	3.5	60	220	150	Overheating protection		IP55	14.0
361LSB-50	5.0	1.7	60	220	150	Overheating protection		IP55	14.0
361LSC-65	6.5	2.8	100	220	170	Overheating protection		IP55	52.0
361LSC-99	10.0	2.0	100	220	170	Overheating protection		IP55	52.0
361LSC-160	16.0	1.0	100	220	370	Overheating protection		IP55	58.0

Standard specification of pneumatic diaphragm actuator

Purpose	Drive actuator of straightaway type adjusting valve, on-off valve
Mode	PDL30、PDL40、PDL50、PDL50L、PDL60
Structural features	Pneumatic diaphragm, single action and multi-spring structure
Action type	Direct action (D), reverse action (R)
Supply pressure	0.14 MPa G、0.3 MPa G
Air supply connection	RC1/4（RC3/8 for PDL60）
Action	Direct action type: when air signal increase valve close; reverse action type:when air signal increase valve open.
Basic error	±2% (with positioner); ±5% (without positioner)
Lag	1% (with positioner); 5% (without positioner)
Return difference	1% (with positioner); 3% (without positioner)
Linear	±1% (with positioner); ±5% (without positioner)
Allowable environmental temperature	-30℃～70℃
Matching accessories	Electro-pneumatic positioner, air-air positioner, air filtration reducing valve, solenoid valve, limit switch, lockup valve, etc.

Actuator travel, spring range, output force

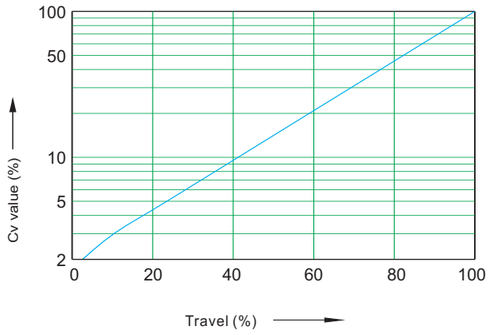
Mode	PDL30		PDL40		PDL50		PDL50L		PDL60	
Travel mm	12 ,20 ,25		20 ,25 ,30 ,40		30 ,40 ,50 ,60		70 ,80		50 ,60 ,70 ,80 ,90 ,100	
Spring range Kpa	20~100	80~200	20~100	80~200	20~100	80~200	20~100	80~200	20~100	80~200
Output force N	600	2430	1080	4310	1860	7450	1860	7450	3130	12500

Note: the above date are norm of specification, special travel or output force can be made according to the customers requirements

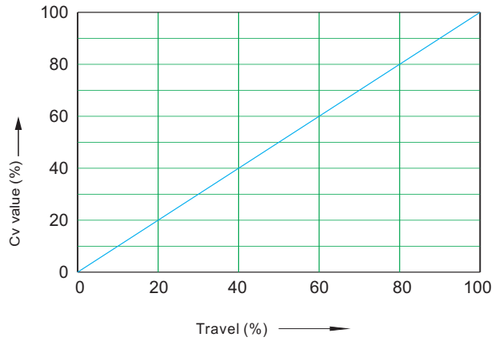
Flow characteristic

The inherent flow characteristics of CSC cage-guided valve include equal percentage flow characteristic, linear characteristic, quick-opening characteristic, etc. for selection, and the equal percentage flow characteristic and linear characteristic shall comply with the regulations of IEC 60534-1 standards.

Equal percentage flow characteristic
(conform to IEC 60534-2-1 specification)



Linear characteristic
(conform to IEC60534-2-1 specification)



The flow characteristic of adjusting valve is divided into inherent flow characteristic and installed flow characteristic, inherent flow characteristic was also named ideal flow characteristic, referring to the characteristic of flow varying along with opening with a constant pressure drop in the inlet and outlet region.

The common flow characteristics are: equal percentage flow characteristic (also named logarithmic characteristic), Linearity (also named linear characteristic) and quick opening characteristic. When adjusting valve of linear characteristic is in small opening, the relative varying value of flow is large, and sensitivity is high, but it is difficult to control, however, when in large opening, the relative varying value of flow is small. When adjusting valve of equal percentage flow characteristic is in small opening, the relative varying value of flow is small, adjusting stability and mild, while in large opening, the relative varying value of flow is large.

Equal percentage flow characteristic is the direct ratio relationship between the relative varying value of flow across the valve, caused by the relative varying of displacement while valve opening and the relative flow in the same spot.

$$\frac{d(\frac{q_v}{q_{v\,max}})}{d(\frac{\ell}{L})}=K\frac{q_v}{q_{v\,max}}$$ via integral transform, getting the formula: $$\frac{C_V}{C_{V\,MAX}}=R^{(\frac{\ell}{L}-1)}$$

$\frac{C_V}{C_{V\,MAX}}$ refer to relative flow characteristic; $\frac{\ell}{L}$ refer to relative displacement; R is adjustable ratio.

Linear flow characteristic is the linear relationship between the relative flow and relative displacement.

$$\frac{d(\frac{q_v}{q_{v\,max}})}{d(\frac{\ell}{L})}=K$$ via integral transform, getting the formula: $$\frac{C_V}{C_{V\,MAX}}=\frac{1}{R}+(1-\frac{1}{R})\times\frac{\ell}{L}$$

Allowable pressure drop

PDL pneumatic diaphragm actuator
Gland packing: V-type PTFE

Unit:MPa

Specification of the actuator	Spring range kPa G	Sealing type of valve seat	Specification of valve plug（mm）											
			25	32	40	50	65	80	100	125	150	200	250	300
PDL30	20~100	Hard seal	---	---	---	---	---	---	---	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
	80~200	Hard seal	9.50	9.12	8.40	---	---	---	---	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	---	---	---	---	---	---	---	---	---
PDL40	20~100	Hard seal	4.36	2.66	1.10	---	---	---	---	---	---	---	---	---
		Soft seal	2.80	2.65	1.10	---	---	---	---	---	---	---	---	---
	80~200	Hard seal	9.50	9.50	9.50	9.50	9.50	8.60	---	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	2.80	2.80	2.80	---	---	---	---	---	---
PDL50	20~100	Hard seal	---	---	---	3.34	---	---	---	---	---	---	---	---
		Soft seal	---	---	---	2.80	---	---	---	---	---	---	---	---
	80~200	Hard seal	---	---	---	9.50	9.50	9.50	9.50	8.45	7.40	4.75	---	---
		Soft seal	---	---	---	2.80	2.80	2.80	2.80	2.80	2.80	2.80	---	---
PDL60	80~200	Hard seal	---	---	---	---	---	---	---	9.50	9.50	8.50	6.80	5.00
		Soft seal	---	---	---	---	---	---	---	2.80	2.80	2.80	2.80	2.80

Note: When the range of spring is from 20 to 100kPa, air supply pressure is 140kPa G; when the range of spring is from 80 to 200KPa, air supply pressure is 300kPa G.

PDL pneumatic diaphragm actuator
Gland packing: flexible graphite

Unit:MPa

Specification of the actuator	Spring range kPa G	Sealing type of valve seat	Specification of valve plug（mm）											
			25	32	40	50	65	80	100	125	150	200	250	300
PDL40	80~200	Hard seal	8.00	8.00	8.00	8.00	---	---	---	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
PDL50	80~200	Hard seal	---	---	---	8.00	8.00	8.00	7.50	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
PDL60	80~200	Hard seal	---	---	---	---	---	---	---	8.00	8.00	5.50	4.00	1.00
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---

Note: when the spring ranges from 20 to 100kPa, air supply pressure is 140kPa G; when the spring ranges from 80 to 200kPa, air supply pressure is 300kPa G.

Allowable pressure drop

361L electronic actuator

Gland packing: V-type PTFE

Unit: Mpa

Specification of The Actuator	Output Force KN	Sealing Type of Valve Seat	Specification of Valve Plug(mm)											
			25	32	40	50	65	80	100	125	150	200	250	300
361LSA-20	2.0	Hard seal	8.30	5.50	5.10	3.00	---	---	---	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	2.80	---	---	---	---	---	---	---	---
361LSA-30	3.0	Hard seal	9.50	9.50	9.50	7.90	---	---	---	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	2.80	---	---	---	---	---	---	---	---
361LSA-50	5.0	Hard seal	---	---	---	9.50	9.50	9.50	6.80	4.70	2.80	---	---	---
		Soft seal	---	---	---	2.80	2.80	2.80	2.80	2.80	2.80	---	---	---
361LSA-65	6.5	Hard seal	---	---	---	---	9.50	9.50	9.50	6.80	5.50	---	---	---
		Soft seal	---	---	---	---	2.80	2.80	2.80	2.80	2.80	---	---	---
361LSA-100	10.0	Hard seal	---	---	---	---	---	---	9.50	9.50	9.50	7.30	5.30	3.40
		Soft seal	---	---	---	---	---	---	2.80	2.80	2.80	2.80	2.80	2.80

361L electronic actuator

Unit: Mpa

Specification of The Actuator	Output Force KN	Sealing Type of Valve Seat	Specification of Valve Plug(mm)											
			25	32	40	50	65	80	100	125	150	200	250	300
361LSA-50	5.0	Hard seal	8.00	8.00	8.00	8.00	3.00	1.00	---	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
361LSA-65	6.5	Hard seal	---	---	---	9.50	9.50	6.80	2.30	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
361LSA-100	10.0	Hard seal	---	---	---	---	---	---	8.00	2.40	0.80	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---

Allowable pressure drop

PSL electronic actuator

Gland packing: V-type PTFE

Unit: Mpa

Specification of The Actuator	Output Force KN	Sealing Type of Valve Seat	Specification of Valve Plug(mm)											
			25	32	40	50	65	80	100	125	150	200	250	300
PSL202MA	2.0	Hard seal	8.80	6.90	5.20	3.60	2.70	1.90	---	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	2.80	2.70	1.90	---	---	---	---	---	---
PSL204.1MA	4.5	Hard seal	9.50	9.50	9.50	9.50	9.10	7.10	5.60	---	---	---	---	---
		Soft seal	2.80	2.80	2.80	2.80	2.80	2.80	2.80	---	---	---	---	---
PSL208.1MA	8.0	Hard seal	---	---	---	---	9.50	9.50	9.50	---	---	---	---	---
		Soft seal	---	---	---	---	2.80	2.80	2.80	---	---	---	---	---
PSL312MA	12.0	Hard seal	---	---	---	---	---	---	---	9.50	9.50	---	---	---
		Soft seal	---	---	---	---	---	---	---	2.80	2.80	---	---	---
PSL320MA	20.0	Hard seal	---	---	---	---	---	---	---	---	---	9.50	9.50	9.50
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---

PSL electronic actuator

Unit: Mpa

Specification of The Actuator	Output Force KN	Sealing Type of Valve Seat	Specification of Valve Plug(mm)											
			25	32	40	50	65	80	100	125	150	200	250	300
PSL204.1MA	4.5	Hard seal	8.00	8.00	8.00	8.00	8.00	6.10	---	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
PSL208.1MA	8.0	Hard seal	---	---	---	---	---	8.00	8.00	---	---	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
PSL312MA	12.0	Hard seal	---	---	---	---	---	---	---	8.00	8.00	---	---	---
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---
PSL320MA	20.0	Hard seal	---	---	---	---	---	---	---	---	---	8.00	8.00	8.00
		Soft seal	---	---	---	---	---	---	---	---	---	---	---	---

Weight of product

Weight (equipped with pneumatic diaphragm actuator PDL)

Uint: Kg

Valve size		Actuator	150#、PN1.6		300#、PN4.0		600#、PN10.0	
DN	NPS		Standard type	Extension type	Standard type	Extension type	Standard type	Extension type
40	1-1/2	PDL30	39	40	44	46	49	51
		PDL40	46	47	51	53	56	58
50	2	PDL40	51	53	56	58	61	64
		PDL50	82	84	87	89	92	95
80	3	PDL40	66	69	76	79	81	86
		PDL50	97	100	107	110	132	137
100	4	PDL50	107	111	122	126	167	173
150	6	PDL50	187	192	217	222	267	275
		PDL60	205	210	235	240	285	293
200	8	PDL50L	275	287	325	340	445	465
		PDL60	283	295	333	348	453	473
250	10	PDL60	450	462	530	545	770	790
300	12	PDL60	620	635	700	718	990	1015

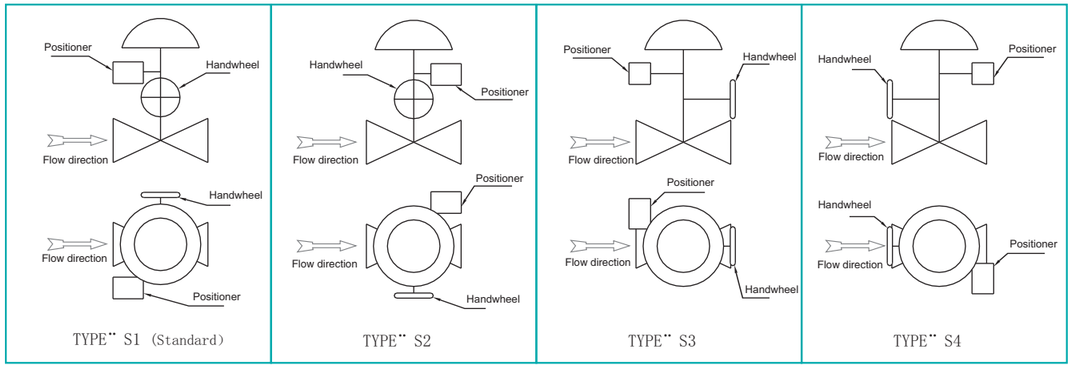
Weight (equipped with electric actuator PSL)

Uint: Kg

Valve size		Actuator	150#、PN1.6		300#、PN4.0		600#、PN10.0	
DN	NPS		Standard type	Extension type	Standard type	Extension type	Standard type	Extension type
40	1-1/2	PSL202	25	26	30	32	35	37
		PSL204.1	25	26	30	32	35	37
50	2	PSL202	30	32	35	37	40	43
		PSL204.1	30	32	35	37	40	43
80	3	PSL202	45	48	55	58	80	85
		PSL204.1	45	48	55	58	80	85
100	4	PSL208.1	47	50	57	60	82	87
150	6	PSL204.1	55	59	70	74	115	121
		PSL208.1	57	61	72	76	117	123
200	8	PSL312	140	145	170	175	220	228
		PSL320	230	242	280	295	400	420
250	10	PSL320	400	412	480	495	710	730
300	12	PSL320	570	585	650	668	940	965

Installation position of the actuator and accessories

The following figure is installation position figure of the actuator and accessories, so users can choose based on operating conveniently, air or cable joint position and other factors. S1 is standard installation position figure. (Attention: hand wheel is optional).

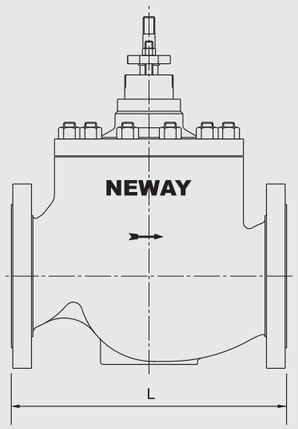


TYPE¨ S1 (Standard)　TYPE¨ S2　TYPE¨ S3　TYPE¨ S4

Face-face dimension

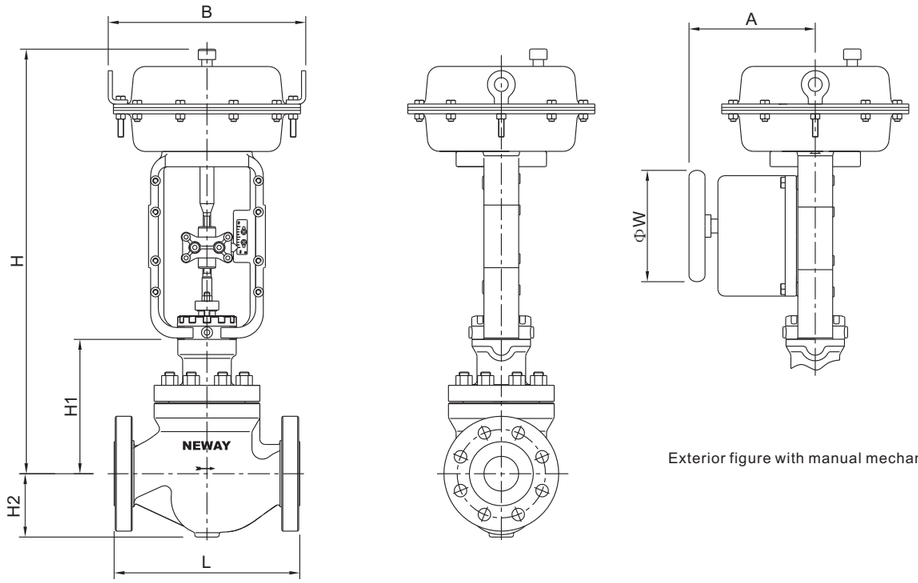
valve size		Face-face dimension L											
		ANSI 150 RF PN1.6 RF		ANSI 150 RTJ PN1.6 RTJ		ANSI 300 RF PN4.0 RF		ANSI 300 RTJ PN4.0 RTJ		ANSI 600 RF PN10.0 RF		ANSI 600 RTJ PN10.0 RTJ	
DN	NPS	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
15	1/2	184	7.25	197	7.75	190	7.50	202	7.94	203	8.00	203	8.0
20	3/4	184	7.25	197	7.75	194	7.62	206	8.12	206	8.12	206	8.12
25	1	184	7.25	197	7.75	197	7.75	210	8.25	210	8.25	210	8.25
40	1-1/2	222	8.75	235	9.25	235	9.25	248	9.75	251	9.88	251	9.88
50	2	254	10.00	267	10.50	267	10.50	282	11.12	286	11.25	284	11.37
65	2-1/2	276	10.88	289	11.38	292	11.50	308	12.12	311	12.25	314	12.37
80	3	298	11.75	311	12.25	317	12.50	333	13.12	337	13.25	340	13.37
100	4	352	13.88	365	14.38	368	14.50	384	15.12	394	15.50	397	15.62
150	6	451	17.75	464	18.25	473	18.62	489	19.24	508	20.00	511	20.12
200	8	543	21.38	556	21.88	568	22.38	584	23.00	610	24.00	613	24.12
250	10	673	26.50	686	27.00	708	27.88	724	28.50	752	29.62	755	29.74
300	12	737	29.00	749	29.50	775	30.50	790	31.12	819	32.25	822	32.37
350	14	889	35.00	902	35.50	927	36.50	943	37.12	972	38.25	475	38.37
400	16	1016	40.00	1029	40.50	1057	41.62	1073	42.24	1108	43.62	1111	43.74

Note: According to IEC 60534-3-1976 < Part 3 dimension section 1: Face-to-Face Dimension for Flanged two-way Globe-Style Control Valves> .
Class rating is national standard or other national standard, using the approached grade value in the above table.



External dimensions

PDL pneumatic diaphragm actuator

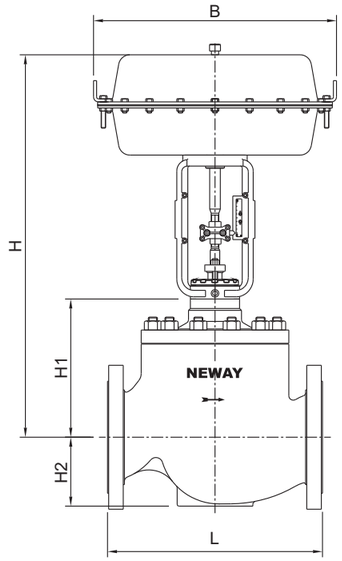


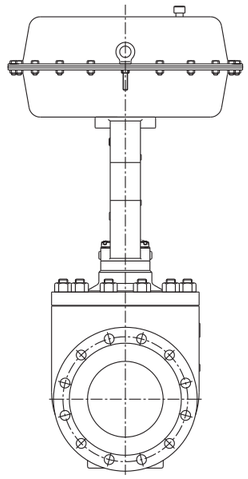
Exterior figure with manual mechanism

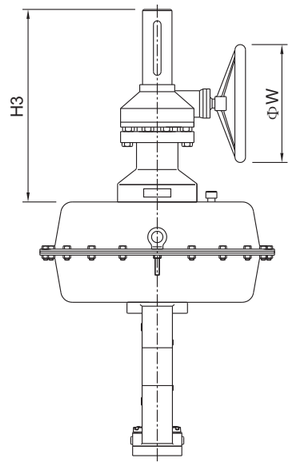
Uint：mm

Valve size		Actuator	H		H1		H2	B	A	W
DN	NPS		Standard type	Extension type	Standard type	Extension type				
40	1-1/2	PDL30	610	760	180	230	70	270	180	160
		PDL40	630	780	180	230	70	350	180	160
50	2	PDL40	645	795	195	345	91	350	180	160
		PDL50	765	915	195	345	91	470	260	300
80	3	PDL40	660	810	210	360	102	350	180	160
		PDL50	780	930	210	360	102	470	260	300
100	4	PDL50	850	1000	280	430	120	470	260	300
150	5	PDL50	880	1030	310	460	150	470	260	300
200	6	PDL50L	1070	1220	370	520	190	470	260	300

PDL pneumatic diaphragm actuator





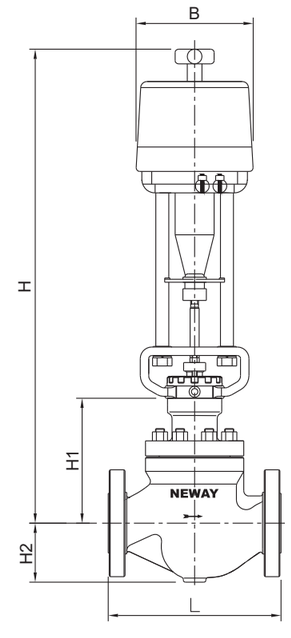


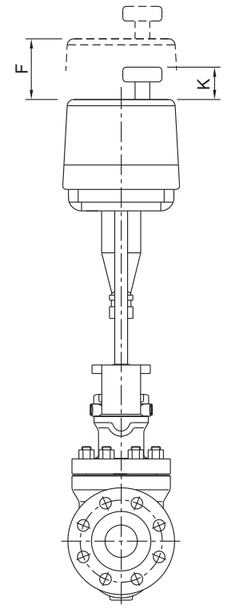
Exterior figure with manual mechanism

Uint：mm

Valve size		Actuator	H		H1		H2	B	H3	W
DN	NPS		Standard type	Extension type	Standard type	Extension type				
150	6	PDL60	860	1010	310	460	150	620	500	300
200	8	PDL60	950	1100	370	520	190	620	500	300
250	6	PDL60	1000	1150	420	570	260	620	500	300
300	8	PDL60	1060	1210	480	630	300	620	500	300

PSL electronic actuator





Uint：mm

Valve size		Actuator	H		H1		H2	K	F
DN	NPS		Standard type	Extension type	Standard type	Extension type			
40	1-1/2	PSL202	640	790	180	230	70	50	100
		PSL204.1	640	790	180	230	70	50	100
50	2	PSL202	805	955	345	91	91	50	100
		PSL204.1	805	955	345	91	91	50	100
80	3	PSL202	670	820	210	360	102	50	100
		PSL204.1	670	820	210	360	102	50	100
		PSL208.1	700	850	210	360	102	50	100
100	4	PSL204.1	740	890	280	430	120	50	100
		PSL208.1	770	920	280	430	120	50	100
150	6	PSL312	880	1030	310	460	150	65	230
200	8	PSL320	1130	1280	370	520	190	100	230
250	10	PSL320	1180	1330	420	570	260	100	230
300	12	PSL320	1240	1390	480	630	300	100	230

Flange standard comparison table

The following table is comparison on flange standard in common use, including ISO international standard, ANSI American standard, JIS Japanese standard, DIN German standard, GB Chinese national standard, HG standard of Chinese Chemistry Department, JB standard of Chinese Machinery Department, etc. The same code number standard of Neway Company expresses that they can exchange for use with each other, but not definitely in full accord.

Code number of Neway	Standard number	
	ANSI B16.5 ANSI B16.47	GB/T9112~9124-2000 HG20615~20635-97 ISO7005-1:1992
0	125 Lb	
1	150 Lb	PN2.0 MPa
2	250 Lb	
3	300 Lb	PN5.0 MPa
4	400 Lb	
6	600 Lb	PN11.0 MPa
8	800 Lb	
9	900 Lb	PN15.0 MPa
15	1500 Lb	PN26.0 MPa
25	2500 Lb	PN42.0 MPa

Code number of Neway	Standard number
	JIS
2K	2K
5K	5K
10K	10K
16K	16K
20K	20K
30K	30K
40K	40K
63K	63K

Code number of Neway	Standard number		
	GB/T9112~9124-2000 HG20592~20614-97	DIN	ISO7005-1:1992
01P1		PN0.1 MPa	
02P1	PN0.25 MPa	PN0.25 MPa	PN0.25 MPa
06P1	PN0.6 MPa	PN0.6 MPa	PN0.6 MPa
10P1	PN1.0 MPa	PN1.0 MPa	PN1.0 MPa
16P1	PN1.6 MPa	PN1.6 MPa	PN1.6 MPa
25P1	PN2.5 MPa	PN2.5 MPa	PN2.5 MPa
40P1	PN4.0 MPa	PN4.0 MPa	PN4.0 MPa
63P1	PN6.3 MPa	PN6.3 MPa	
100P1	PN10 MPa	PN10 MPa	
160P1	PN16 MPa	PN16 MPa	
250P1	PN25 MPa	PN25 MPa	
320P1		PN32 MPa	
400P1		PN40 MPa	

Code number of Neway	Standard number
	JB/T 79.1~86.2-94
02P2	PN0.25 MPa
06P2	PN0.6 MPa
10P2	PN1.0 MPa
16P2	PN1.6 MPa
25P2	PN2.5 MPa
40P2	PN4.0 MPa
63P2	PN6.3 MPa
100P2	PN10 MPa
160P2	PN16 MPa
200P2	PN20 MPa

Product Warranty

Seller will replace without charge or refund the purchase price of products provided by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that written claim, specifying the alleged defect, is presented to the Seller within 18 months from the date of shipment or 12 months after installation, whichever occurs first. Seller shall in no event bear any labor, equipment, engineering or other costs incurred in connection with repair of replacement. The warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and seller's exclusive liability.