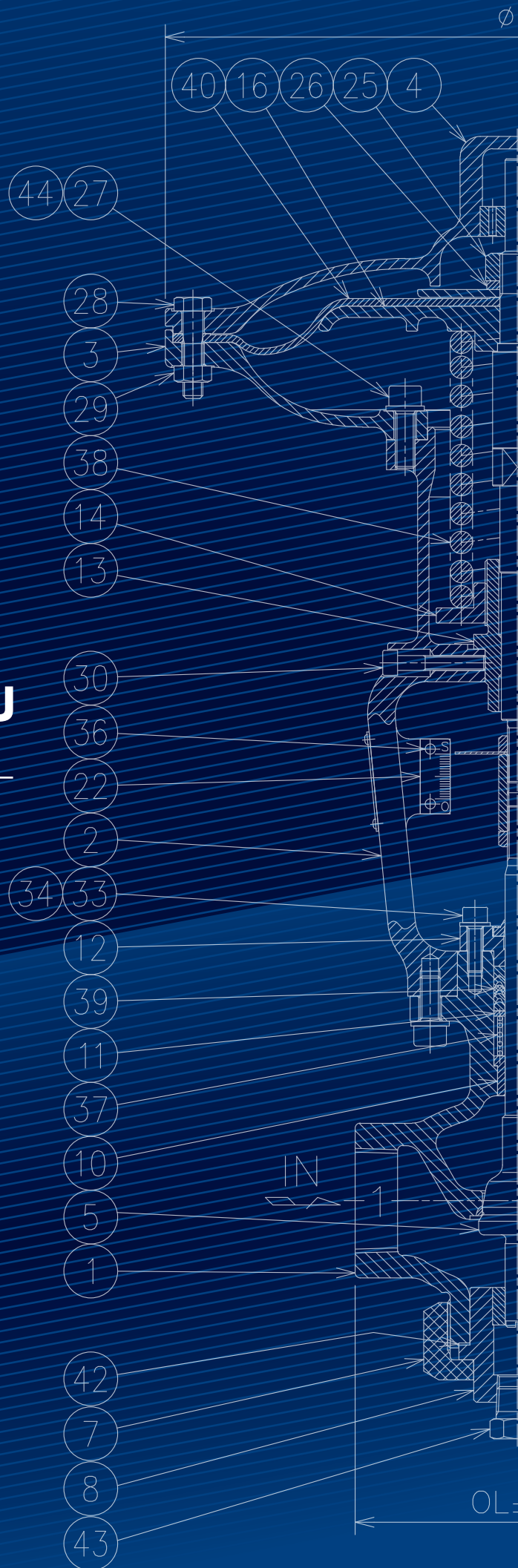


ROCKY-ICHIMARU

Tire Curing Press Valves





Control Valve DC Series

This is a single valve seat regulator valve with a diaphragm driver using air pressure operation. The stroke of the stem varies depending on the supplied air pressure, and flow can be varied by altering the gap between the stem and body. A stellite is used on both the valve element and valve seat, making it highly heat, corrosion and wear resistant, suppressing erosion and corrosion to give a longer lifespan. It is used in tire curing presses to control the shaping pressure with steam and to control the temperature of the platen and container jacket.

Main Specifications

Fluid	Steam
Maximum Working Pressure	1.7MPa
Maximum Working Temperature	210°C
Operation Air Pressure	0~0.13MPa
Valve Seat Leakage	IEC 60534-4:2006 Class IV (0.01% Rated Cv)
End Connection	Pilot Port Rc1/4, NPT1/4, G1/4
	Ports 1 & 2 Threaded End (Rc, NPT) Flanged End (JIS 20K, ASME Class 300, DIN PN40)
Material of main parts *	Body: SCS13 (seat: Stellite hard facing)
	Flange: SUS304 or S25C
	Stem: SUS403 with hard chrome plating (seat: Stellite hard facing)

* See valve assembly drawings for details.

Appearance				
Function *	Air to Open(DN15 to DN40)		Air to Close(DN15 to DN25)	
Model Number	DC1211-□□	DC1212-□□	DC1221-□□	DC1222-□□
End Connection	Threaded End	Flanged End	Threaded End	Flanged End

* About operation: Air to open: valve opens when signal air pressure is supplied Air to close: valve closes when signal air pressure is supplied

Product Coding

	N1	N2	N3	N4		N5	N6	N7	N8	N9	N10
DC	1	2	1	2	-	20	J	P	Y	CV1	Z12

Symbol	Meaning of symbol	Code	Meaning of code	Remarks
N1	Model	1	1st Model	
N2	Number of Ports	2	2-way type	
N3	Function	1	Air to open	Valve opens when signal air pressure is supplied
		2	Air to close	Valve closes when signal air pressure is supplied
N4	End Connection	1	Threaded End	
		2	Flanged End	
N5	Nominal Size	15	DN15	
		20	DN20	
		25	DN25	
		32	DN32	
		40	DN40	Only Air to open
N6	End Connection Flange Type	Nil	-	No code is specified if all connections are threaded type (if N4 is "1").
		J	JIS 20K	Indicates the specification of the flange connection.
		A	ASME Class 300	
		D	DIN PN40	
N7	End Connection Body Port/ Pilot Port Thread Type	P	Rc / Rc	Indicates connection / loading port is threaded. For "B", the connection is a flange or Rc type and loading port is a G type. Thread size on loading port is 1/4 inch (Rc1/4, NPT1/4, G1/4).
		N	NPT / NPT	
		B	Rc / G	
N8	End Connection Flange Material (Ports 1 & 2)	Nil	Steel (S25C)	Flange material is S25C.
		Y	SUS304	Flange material is SUS304.
N9	Cv Value *	CV1	Max. Cv = approx. 1	DN15, DN20
		CV3	Max. Cv = approx. 3	
		CV6	Max. Cv = approx. 6	DN25
		CV8	Max. Cv = approx. 8	
		CV20	Max. Cv = approx. 20	
N10	Specialized Code	Z□□	Specialized Specification	Bespoke code (e.g. Z1) is used for specialized options.

* Cv values are design targets and do not represent actual performance.

Specialized Options (Examples)

- Electro-pneumatic positioner (Specialized Code: Z11 (heat resistance 80°C), Z12 (heat resistance 100°C))
The system is open in proportion to the input electric signal, enabling fine control with less hysteresis.

- Extended gland leakage lifespan (Specialized Code: Z17)

The gland packing leakage lifespan is extended by changing the material used for the gland packing and changing the stem coating.

- CRN compliance (Specialized Code: Z98)

Warnings

- Maximum allowable leak rate

When this valve is fully closed, valve seat leakage is compliant with IEC 60534-4:2006 (JIS B 2005-4:2012). As the valve is a single valve with a metal seat, it is considered Class IV in terms of regulator valve leakage classes, which means a maximum allowable leak rate of 0.01% of the valve flow coefficient (CV). The TPC valve (piston) can therefore be used not only for flow control, but also where valve seat leakage must be kept to zero.

- Grand packing leakage

While our valves are shipped only after conducting our testing standards to check that there is no leakage from the grand packing, a small amount of leakage may occur due to structure of gland packing at initial use or during use on-site.

- Loading pressure and loading pressure regulation method

When shipped from the factory, an initial adjustment is carried out to the testing standards below to ensure the valve will initially open with the following standard loading pressure when a primary pressure of 0.6MPa is supplied. Verify operation after valve installation, and make sure to read just under customer's usage environment. See the attached "Diaphragm Control Valve Open/Close Adjustment" to adjust the initial opening pressure.

* The loading pressure required to fully open the valve cannot be adjusted.

〈Air to Open〉

DN15、DN20、DN25: Initial open 0.02MPa (Fully open 0.12 - 0.13MPa)
 DN32、DN40 : Initial open 0.02MPa (Fully open 0.09 - 0.10MPa)

〈Air to Close〉

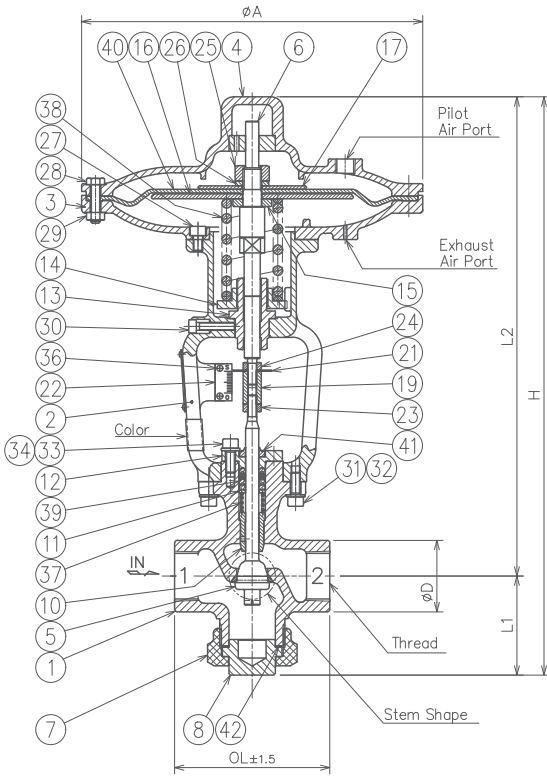
DN15、DN20、DN25 : nitial open 0.08MPa

- Hysteresis

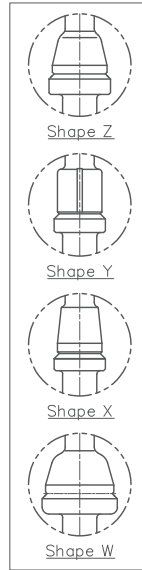
This valve has a hysteresis of approximately 25% in the opening and closing actions. It is therefore not suitable for applications requiring precision degrees of openness. In a typical usage environment such as temperature control, be certain to check whether the valve is suitable by testing the temperature control system as a whole. If valve action and loading pressure hysteresis must be minimized and the high precision control is required, please select a specialized option with a positioner.

DC1211-□□ <Air to Open> Ports 1 & 2 Threaded

DN15, DN20, DN25



Stem Shape

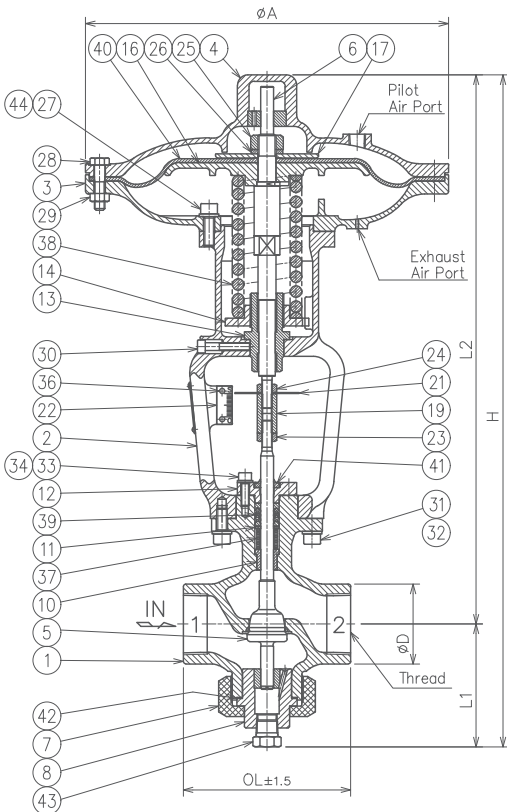


☆: Recommended Spare Parts

22	Lift Gauge Plate	☆	42	Gasket Packing
21	Lift Gauge Ring	☆	41	Dust Seal
19	Joint Nut	☆	40	Diaphragm
17	Diaphragm Upper Seat	☆	39	Gland Packing
16	Diaphragm Lower Seat		38	Spring
15	Washer		37	Packing Spring
14	Spring Seat		36	Driving Screw
13	Adjust Rod Guide		34	Spring Lock Washer
12	Gland		33	Socket Cap Screw
11	Packing Washer		32	Spring Lock Washer
10	Rod Guide		31	Socket Cap Screw
8	Cover		30	Socket Cap Screw
7	Union Nut		29	Nut
6	Diaphragm Rod		28	Hexagon Head Screw
5	Stem		27	Socket Cap Screw
4	Diaphragm Upper Cover		26	Spring Lock Washer
3	Diaphragm Lower Cover		25	Nut
2	Yoke Stand		24	Set Nut (Left)
1	Body		23	Set Nut (Right)

Nominal Size		Cv Value	Stem Shape	Color	Dimensions (mm)					Weight (kg)	
mm	inch				OL	øD	L1	L2	H		A
15	1/2	6	Z	-	95	39	60	305	365	220	7.4
		1	Y	Red							
		3	X	Yellow							
20	3/4	6	Z	-	95	39	60	305	365	220	7.4
		1	Y	Red							
		3	X	Yellow							
25	1	8	W	-	100	46	64	309	373	220	7.7

DN32, DN40



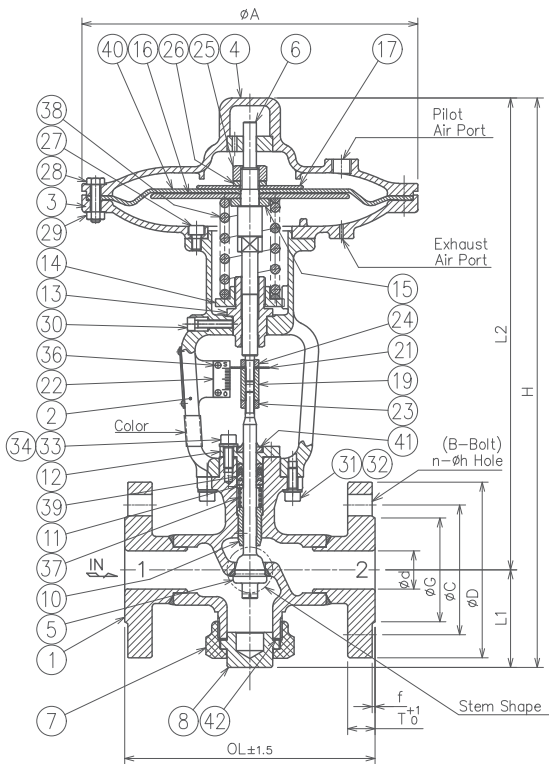
☆: Recommended Spare Parts

23	Set Nut (Right)		44	Spring Lock Washer
22	Lift Gauge Plate	☆	43	Plug
21	Lift Gauge Ring	☆	42	Gasket Packing
19	Joint Nut	☆	41	Dust Seal
17	Diaphragm Upper Seat	☆	40	Diaphragm
16	Diaphragm Lower Seat		39	Gland Packing
14	Spring Seat		38	Spring
13	Adjust Rod Guide		37	Packing Spring
12	Gland		36	Driving Screw
11	Packing Washer		34	Spring Lock Washer
10	Rod Guide		33	Socket Cap Screw
8	Cover		32	Spring Lock Washer
7	Union Nut		31	Socket Cap Screw
6	Diaphragm Rod		30	Socket Cap Screw
5	Stem		29	Nut
4	Diaphragm Upper Cover		28	Hexagon Head Screw
3	Diaphragm Lower Cover		27	Socket Cap Screw
2	Yoke Stand		26	Spring Lock Washer
1	Body		25	Nut
			24	Set Nut (Left)

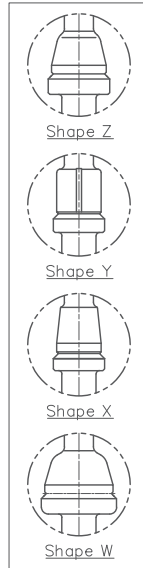
Nominal Size		Cv Value	Dimensions (mm)					Weight (kg)	
mm	inch		OL	øD	L1	L2	H		A
32	1-1/4	20	130	62	95.5	426.5	522	282	17.0
40	1-1/2	20	130	62	95.5	426.5	522	282	17.0

DC1212-□□ <Air to Open> Ports 1 & 2 Flange

DN15、DN20、DN25



Stem Shape



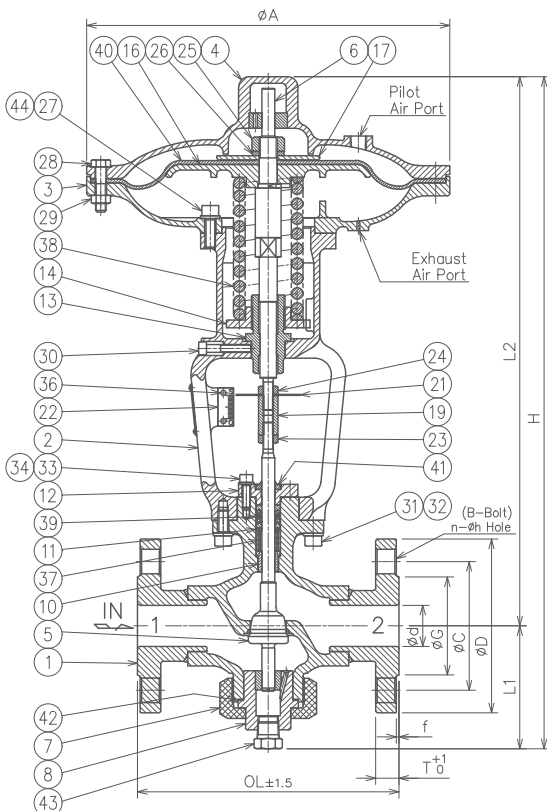
☆: Recommended Spare Parts

22	Lift Gauge Plate	☆	42	Gasket Packing
21	Lift Gauge Ring	☆	41	Dust Seal
19	Joint Nut	☆	40	Diaphragm
17	Diaphragm Upper Seat	☆	39	Gland Packing
16	Diaphragm Lower Seat		38	Spring
15	Washer		37	Packing Spring
14	Spring Seat		36	Driving Screw
13	Adjust Rod Guide		34	Spring Lock Washer
12	Gland		33	Socket Cap Screw
11	Packing Washer		32	Spring Lock Washer
10	Rod Guide		31	Socket Cap Screw
8	Cover		30	Socket Cap Screw
7	Union Nut		29	Nut
6	Diaphragm Rod		28	Hexagon Head Screw
5	Stem		27	Socket Cap Screw
4	Diaphragm Upper Cover		26	Spring Lock Washer
3	Diaphragm Lower Cover		25	Nut
2	Yoke Stand		24	Set Nut (Left)
1	Body & Flange		23	Set Nut (Right)

Nominal Size	Cv Value	Stem Shape	Color	ϕd	Dimensions (mm)							Weight(kg)				
					OL			L1	L2	H	A	JIS	ASME	DIN		
mm	inch				JIS	ASME	DIN									
15	1/2	6	Z	-	13	154	150	154	60	305	365	220	9.0	9.0	9.1	
		1	Y	Red												
		3	X	Yellow												
20	3/4	6	Z	-	19	154	162	154	60	305	365	220	9.2	10.0	9.6	
		1	Y	Red												
		3	X	Yellow												
25	1	8	W	-	25	164	163	164	64	309	373	220	10.7	10.9	10.4	

*For flange dimensions, please refer to the appendix on page 50.

DN32、DN40



☆: Recommended Spare Parts

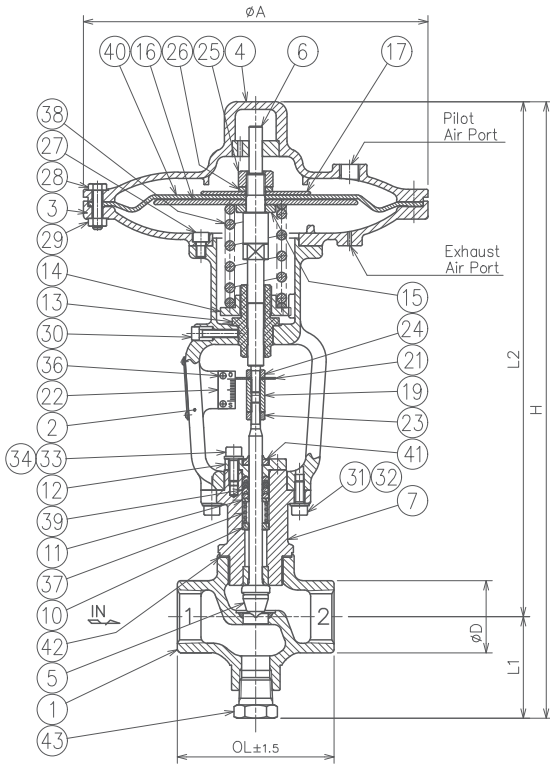
23	Set Nut (Right)	☆	44	Spring Lock Washer
22	Lift Gauge Plate	☆	43	Plug
21	Lift Gauge Ring	☆	42	Gasket Packing
19	Joint Nut	☆	41	Dust Seal
17	Diaphragm Upper Seat	☆	40	Diaphragm
16	Diaphragm Lower Seat		39	Gland Packing
14	Spring Seat		38	Spring
13	Adjust Rod Guide		37	Packing Spring
12	Gland		36	Driving Screw
11	Packing Washer		34	Spring Lock Washer
10	Rod Guide		33	Socket Cap Screw
8	Cover		32	Spring Lock Washer
7	Union Nut		31	Socket Cap Screw
6	Diaphragm Rod		30	Socket Cap Screw
5	Stem		29	Nut
4	Diaphragm Upper Cover		28	Hexagon Head Screw
3	Diaphragm Lower Cover		27	Socket Cap Screw
2	Yoke Stand		26	Spring Lock Washer
1	Body & Flange		25	Nut
			24	Set Nut (Left)

Nominal Size	Cv Value	ϕd	Dimensions (mm)							Weight(kg)					
			OL			L1	L2	H	A	JIS	ASME	DIN			
mm	inch		JIS	ASME	DIN										
32	1-1/4	20	32	203	190	180	95.5	426.5	522	282	20.4	20.4	20.4		
40	1-1/2	20	40	203	210	190	95.5	426.5	522	282	21.5	21.9	20.5		

*For flange dimensions, please refer to the appendix on page 50.

DN15、DN20、DN25

DC1221-□□ <Air to Close> Ports 1 & 2 Threaded



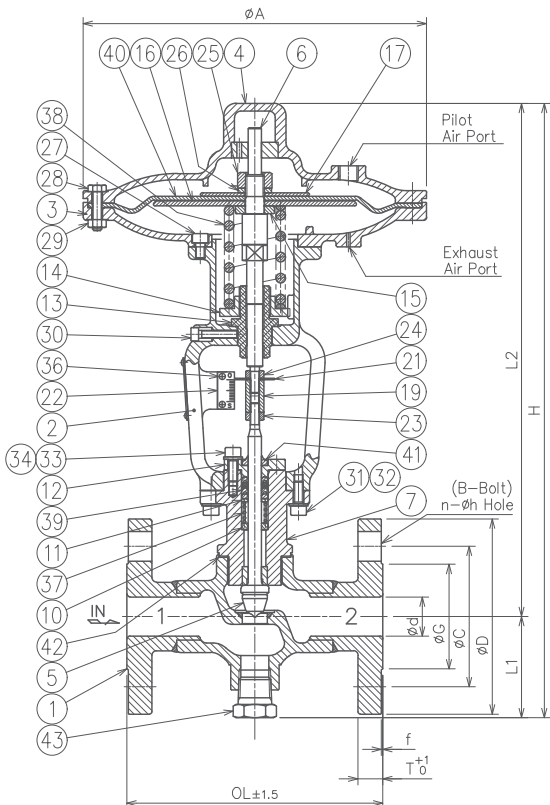
☆:Recommended Spare Parts

23	Set Nut (Right)
22	Lift Gauge Plate
21	Lift Gauge Ring
19	Joint Nut
17	Diaphragm Upper Seat
16	Diaphragm Lower Seat
15	Washer
14	Spring Seat
13	Adjust Rod Guide
12	Gland
11	Packing Washer
10	Washer
7	Bonnet
6	Diaphragm Rod
5	Stem
4	Diaphragm Upper Cover
3	Diaphragm Lower Cover
2	Yoke Stand
1	Body

43	Plug
42	Gasket Packing
41	Dust Seal
40	Diaphragm
39	Gland Packing
38	Spring
37	Packing Spring
36	Driving Screw
34	Spring Lock Washer
33	Socket Cap Screw
32	Spring Lock Washer
31	Socket Cap Screw
30	Socket Cap Screw
29	Nut
28	Hexagon Head Screw
27	Socket Cap Screw
26	Spring Lock Washer
25	Nut
24	Set Nut (Left)

Nominal Size		Cv Value	Dimensions (mm)						Weight (kg)
mm	inch		OL	ØD	L1	L2	H	A	
15	1/2	6	95	39	55	324	379	220	7.4
20	3/4	6	95	39	55	324	379	220	7.4
25	1	8	100	46	65	329	394	220	7.7

DC1222-□□ <Air to Close> Ports 1 & 2 Flange



☆:Recommended Spare Parts

23	Set Nut (Right)
22	Lift Gauge Plate
21	Lift Gauge Ring
19	Joint Nut
17	Diaphragm Upper Seat
16	Diaphragm Lower Seat
15	Washer
14	Spring Seat
13	Adjust Rod Guide
12	Gland
11	Packing Washer
10	Washer
7	Bonnet
6	Diaphragm Rod
5	Stem
4	Diaphragm Upper Cover
3	Diaphragm Lower Cover
2	Yoke Stand
1	Body & Flange

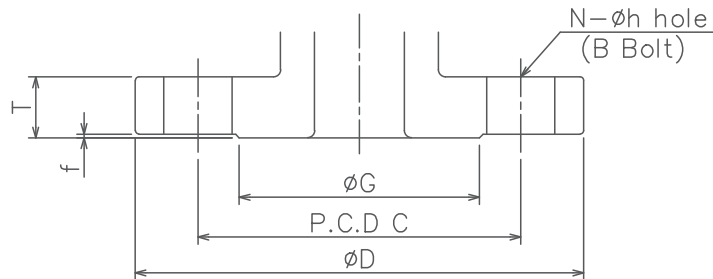
43	Plug
42	Gasket Packing
41	Dust Seal
40	Diaphragm
39	Gland Packing
38	Spring
37	Packing Spring
36	Driving Screw
34	Spring Lock Washer
33	Socket Cap Screw
32	Spring Lock Washer
31	Socket Cap Screw
30	Socket Cap Screw
29	Nut
28	Hexagon Head Screw
27	Socket Cap Screw
26	Spring Lock Washer
25	Nut
24	Set Nut (Left)

Nominal Size		Cv Value	Ød	Dimensions (mm)						Weight(kg)			
mm	inch			OL			L1	L2	H	A	JIS	ASME	DIN
15	1/2	6	13	154	150	154	55	324	379	220	9.0	9.0	9.2
20	3/4	6	19	154	162	154	55	324	379	220	9.2	10.0	9.6
25	1	8	25	164	163	164	65	329	394	220	10.7	10.9	10.4

*For flange dimensions, please refer to the appendix on page 50.

Reference Materials

JIS/ANSI/DIN Piping Flange Dimension List



※All of our valve flange surfaces have a smooth finish ($Ra \leq 3.2$).

JIS 20K Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	14	1	51	70	4	15	M12
20	3/4	100	16	1	56	75	4	15	M12
25	1	125	16	1	67	90	4	19	M16
32	1-1/4	135	18	2	76	100	4	19	M16
40	1-1/2	140	18	2	81	105	4	19	M16
50	2	155	18	2	96	120	8	19	M16
65	2-1/2	175	20	2	116	140	8	19	M16
80	3	200	22	2	132	160	8	23	M20

JIS B 2220: 2012

ANSI/ASME Class 300 Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	14.5	1.6	35	66.5	4	15	1/2"
20	3/4	117	16	1.6	43	82.5	4	19	5/8"
25	1	124	18	1.6	51	89.0	4	19	5/8"
32	1-1/4	133	19.1	1.6	63.5	98.5	4	19	5/8"
40	1-1/2	156	21	1.6	73	114.5	4	22	3/4"
50	2	165	22.3	1.6	92	127.0	8	19	5/8"
65	2-1/2	190	25.5	1.6	104.6	149.4	8	22	3/4"
80	3	210	28.5	1.6	127	168.1	8	22	3/4"

ANSI/ASME B 16.5: 1996

DIN PN40 Flange Dimensions

Unit: mm

Nominal Size		Dimensions of Flange Part				Bolt Holes			Bolt Size
		Flange Diameter	Thickness	RF Part		Pitch Circle Diameter	Number	Hole Diameter	
mm	inch			D	T				Raised Height
15	1/2	95	16	2	45	65	4	14	M12
20	3/4	105	18	2	58	75	4	14	M12
25	1	115	18	2	68	85	4	14	M12
32	1-1/4	140	18	2	78	100	4	18	M16
40	1-1/2	150	18	3	88	110	4	18	M16
50	2	165	20	3	102	125	4	18	M16
65	2-1/2	185	22	3	122	145	8	18	M16
80	3	200	24	3	138	160	8	18	M16

EN 1092-1: 2001

<Manufacturer>

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