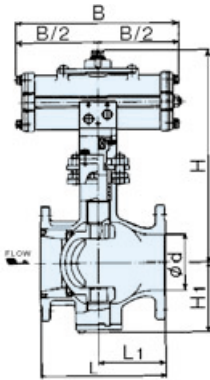


## Tough Seal Type V Port Valve

### ● Boundary dimension

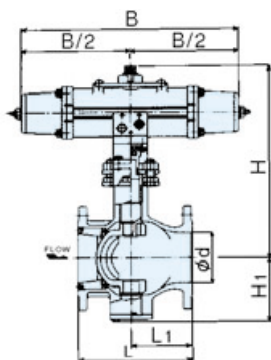
○ Valve application : VPN1100NC (Double acting)



VPN1100NC PN04D~12D

DN	d	Stainless cast steel Cast steel Ductile cast steel				H1	Actuator code	B	B1	B2	H	Weight (kg) St. cast steel
		10K CL150		20K CL300								
		L	L1	L	L1							
2 5	25	127	72	165	110	48	PN-04D	144	B/2	B/2	200	5.5
							PN-05D	172			212	6.5
4 0	38	165	95	190	120	71	PN-05D	172	B/2	B/2	241	10
							PN-06D	214			257	11
							PN-08D	266			278	14.5
5 0	51	178	103	216	141	77	PN-06D	214	B/2	B/2	262	12.5
							PN-08D	266			283	16
6 5	64	190	110	241	161	96	PN-06D	214	B/2	B/2	295	18
							PN-08D	266			316	20
							PN-10D	336			360	25.5
8 0	76	203	113	283	193	101	PN-08D	266	B/2	B/2	321	21.5
							PN-10D	336			365	27
1 0 0	102	229	123	305	199	131	PN-08D	266	B/2	B/2	359	29.5
							PN-10D	336			403	35
							PN-12D	420			436	43
1 2 5	127	356	211	381	236	163	PN-10D	336	B/2	B/2	453	50.5
							PN-12D	420			483	67.5
							PN-13D	644			570	90
1 5 0	152	394	244	403	253	173	PN-12D	420	B/2	B/2	496	78.5
							PN-13D	644			580	104
							PN-18D	758			—	141
2 0 0	203	457	257	502	302	211	PN-13D	644	B/2	B/2	625	140
							PN-18D	758			—	177
2 5 0	250	533	323	610	—	259	PN-22D	988	B/2	B/2	845	—
							PN-25D	1270			905	—
3 0 0	300	610	360	—	—	316	PN-22D	988	B/2	B/2	900	—
							PN-25D	1270			980	—
3 5 0	335	686	416	—	—	331	PN-22D	988	B/2	B/2	915	—
							PN-25D	1270			995	—

○ Valve application : VPO1100NC (Single acting)



VPO1100NC PO-05D~12D

DN	d	Stainless cast steel Cast steel Ductile cast steel				H1	Actuator Code	B	B1	B2	H	Weight (kg) St. cast steel		
		10K CL150		20K CL300										
		L	L1	L	L1									
2 5	25	127	72	165	110	48	PO-05D	268	B/2	B/2	212	7.5		
							PO-06D	314			228	9		
							PO-08D	329			249	12		
4 0	38	165	95	190	120	71	PO-06D	314	B/2	B/2	257	13		
							PO-08D	329			278	16.5		
							PO-10D	500			322	24.5		
5 0	51	178	103	216	141	77	PO-08D	329	B/2	B/2	283	18		
							PO-10D	500			327	26.5		
6 5	64	190	110	241	161	96	PO-08D	329	B/2	B/2	316	22.5		
							PO-10D	500			360	30.5		
							PO-12D	634			393	43.5		
8 0	76	203	113	283	193	101	PO-10D	500	B/2	B/2	365	32.5		
							PO-12D	634			398	45.5		
							PO-10D	500			403	42		
1 0 0	102	229	123	305	199	131	PO-12D	634	B/2	B/2	436	55		
							PO-13D	869			547	322	491	97
1 2 5	127	356	211	381	236	163	PO-18D	1013	B/2	B/2	541	122		
							PO-13D	869			547	322	612	182
1 5 0	152	394	244	403	253	173	PO-18D	1013	B/2	B/2	551	136		
							PO-18D	1013			634	379	622	196
2 0 0	203	457	257	502	302	211	PO-22D	1272	B/2	B/2	800	265		
							PO-25D	1671			635	1036	860	375
							PO-22D	1272			494	778	845	—
2 5 0	250	533	323	610	—	259	PO-25D	1671	B/2	B/2	906	—		
							PO-25D	1671			635	1036	975	—
3 0 0	300	610	360	—	—	316	PO-25D	1671	B/2	B/2	975	—		
							PO-25D	1671			635	1036	975	—

## ■ Accessories

### ○ Manual operated unit

Product code	MT1	MT2
Applicable Actuator	04D ~ 08D	10D ~ 12D
Handle rotations	43 times	45 times

### ○ Limit switch

Guard type	Rain proof			Explosion proof	Rain proof	Explosion proof
Applicable Actuator	04D · 05D	06D · 08D	10D · 12D	04D ~ 12D	13D, 18D, 22D, 25D	
In-house code	LS1A	LS1B	LS20	—	—	—
Manufacturer code	V-5114E			1LX5001	1LSI-J	1LX5001
Rated Voltage	AC	16A-125, 250V		5A-125, 250V	10A-125, 250, 480V	5A-125, 250V
	DC	0.6A-115V 0.3A-230V		0.8A-125V 0.4A-250V	0.8A-125V 0.4A-250V	
Manufacturer	Yamatake Haneuero					

### ○ Solenoid valve

Guard type	Drip proof	Rain proof	Explosion proof	Drip proof	Rain proof	Explosion proof
Applicable Actuator	04D ~ 12D			13D, 18D, 22D, 25D		
In-house code	ES1	ES20	ES30	—	—	—
Manufacturer code	VF3190	VF3190A	50-VF3190A	4F310-10	4F310-10-B	4F310E-10
Rated Voltage	AC100/110V · 50/60Hz, 200/220V · 50/60Hz			AC100/110V · 50/60Hz, 200/220V · 50/60Hz		
Joint size	Rc1/4			Rc3/8		
Effective section area	13.5mm <sup>2</sup>			32mm <sup>2</sup>		
Manufacturer	SMC			CKD		

### ○ Positioner

Input-Output	Pneumatic - Pneumatic		Electric - Pneumatic (Frame Explosion proof)
Manufacturer code	NP22		NE22
Joint size	Rc1/4		
Supply pressure	0.4 ~ 0.7 MPa		
Signal	20 ~ 100KPa		4 ~ 20mA DC
Linearity	Within ± 1.5%F.S		
Hysteresis	Within 1%F.S		
Air consumption	15N ℓ /min (assumes 0.4 MPa as supply pressure)		13N ℓ /min (assumes 0.4 MPa as supply pressure)
Note	Actuator 04D ~ 06D equip speedcontroller as default		—

### ○ Air Filter Regulator

Applicable Actuator	04D ~ 13D		18D, 22D, 25D
Manufacturer code	AW2001-02-X627	AW2001-02-X619	AW3001-03-X714
Joint size	Rc1/4		Rc3/8
Available pressure scope	0.05 ~ 0.85MPa		
Filtering accuracy	5 micron		
Filter case	With case guard	Metal case (ADC12)	With case guard
Manufacturer	SMC		
Note	Use bracket for positioner		

### ○ Speed controller

Applicable Actuator	04D ~ 13D			18D, 22D, 25D
Manufacturer code	ASN2-01	AS2200-02	AS2000-02	AS4000-03
Allowable pressure	0 ~ 0.99MPa	0.1 ~ 0.7MPa	0.05 ~ 0.99MPa	0.05 ~ 0.99MPa
Joint size	Rc1/4			Rc3/8
Manufacturer	SMC			
Note	Directly attach to ESI ~ ES30 Only for squeezing air	Directly attach to the valves except ESI ~ES30, and positioner	Not for ESI~ES30. For squeezing suction air with PO / PC.	—

## Usage condition v. s. valve grade

Mandatory torque power to activate the valves depends on usage conditions such as fluid state, fluid temperature, seat materials, or shutoff differential pressure, even if their nominal size is the same. Please consider your usage condition when you select actuators.

### Valve type : E100N, E200N, E100JNB, E200JNB, F100NB, E300N

Condition		factor	Factor combination	Rank
Seat material	PTFE (NTF)	a	3a	A
	Reinforced PTFE (NCF)	b	2a + b , a + 2b	B
	Reinforced PTFE (GR)	c	2a + c , 2b + c	C
Fluid state	Clean (less than 100CP)	a	a + b + c , 3b	
	Sludge, solvent, viscous (100~500CP)	b	2c + a , 2c + b	
	Extraneous materials (slurry, iron powder), viscous fluid	c		
Fluid temp.	-20~150°C	a		
	-21~-100°C, 151~200°C	b		

### Valve type : V100NC

Category	Usage condition <sup>1</sup>	Selection <sup>2</sup>			Rank
		Seat	Action		
			ON-OFF	Control	
1	Clean fluid	CF	☉	△	A
		M	○	☉	B
2	Sludge, viscous fluid (less than 500CP)	CF	□	△	B
	Fluid with fiber	M	☉	☉	B
	Soft Powder state (no solids)	ST	○	○	B
3	Soft Powder state (with solids)	M	☉	□	B
		ST	○	☉	B
4	Heavy viscous fluid (rubbery state)	M	□	□	C
		ST	☉	☉	C
5	Slurry, Hard powder state	ST	☉	☉	C

- Note 1
- Category 1 : water, gas, solvent, etc.
  - Category 2 : sludge (no solids), molasses, pulp, white water, etc.  
food powder (such as flour) falls freely.
  - Category 3 : food powder or resin powder with less abrasion
  - Category 4 : latex, viscose, etc.
  - Category 5 : coal ash, powder cokes, nylon (including pellet)

Note 2

☉	Recommended	Category 5 contains fluids with abrasion. Because they may cause parts degradation, it is hard to predict their life time.
○	Possible	
□	Not recommended	
△	Not suitable	

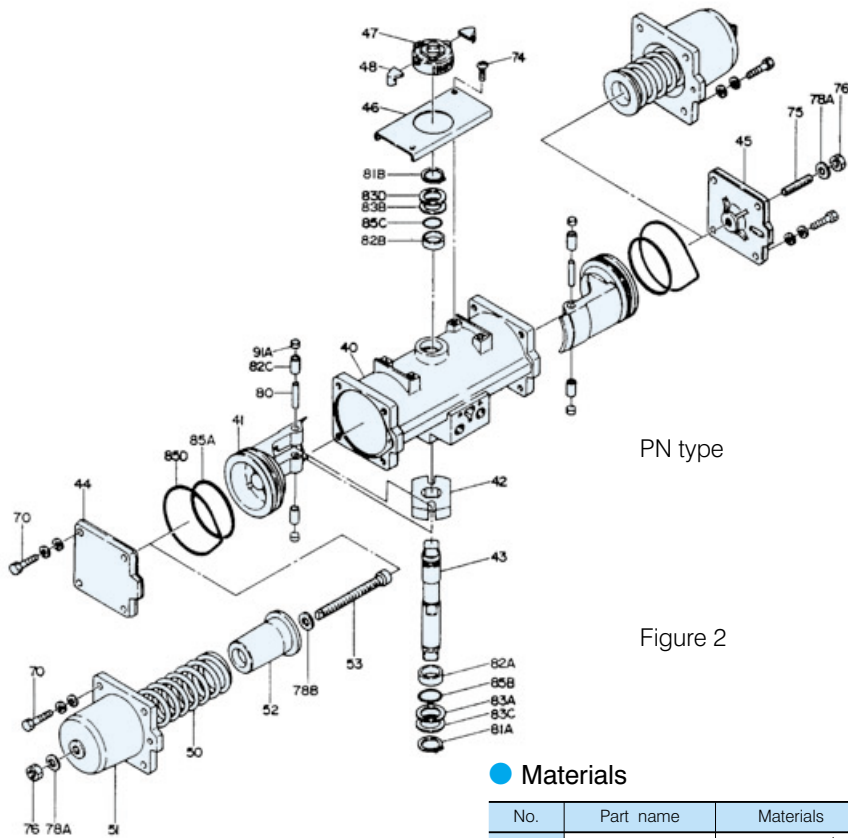
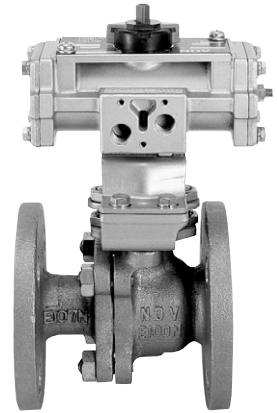
## ■ Torque Actuator

### ● Standard specification

- Operating style : Double acting, Single acting (Reverse acting, Direct acting)
- Usage Pressure : 0.4 MPa (MAX 0.7 MPa)
- Rotation limit : 0~90° (customizable)
- Manual operation : Manual open-close device can be installed.  
To operate double acting type using a lever, you can choose to set up a bypass between OPEN and CLOSE air chambers, or to release air.
- Materials : Please see the materials table.
- Actuator ambient temperature : -10°C~50°C

- Accessories (optional) : Valve positioner, solenoid valve, air devices, limit switch.
- Open-close time controller (optional) : We will set up the speed controller according to your needs.
- Coating (Body) : Phthalic resin paint (if stainless body, no coating).  
(Actuator) : PN Cylinder PN04D~12D Polyurethane resin baking paint  
: PN Cylinder PN13D~25D Phthalic resin paint

### ● Configuration



PN type

Figure 2

PO/PC Type

### ● Materials

No.	Part name	Materials
40	Cylinder	ADC12, AC2A*
41	Piston	FCD400
42	Scotch yoke	SMF5030, S45C*
43	Drive shaft	SCM435
44	Cober A	ADC12, AC2A*
45	Cober B	ADC12, AC2A*
46	Nameplate	A1100P
47	Cap	ABS

\* shows the materials for Actuator 10D and 12D

No.	Part name	Materials
48	Indicator	Polypropylene
50	Pressure coil spring	Spring steel
51	Spring cover	AC2A
52	Spring bearing	S20C, FCD400*
53	Spring bearing bolt	SUS304
70	Hex bolt	SUS304
74	Cross recessed head screw	SUS304
75	Hex socket head screw	SUS304
76	Hex nut	SUS304
78A	Seal washer	SS400+NBR
78B	Splay washer	SPCC
80	Parallel pin	SUS630
81A	C shaped snap ring	SUS304
81B	C shaped snap ring	SUS304
82A	Bearing	Polyacetal
82B	Bearing	Polyacetal
82C	Bearing	SS400+fluorocarbon
83A	Thrusut bering	Polyacetal
83B	Thrusut bering	Polyacetal
83C	Thrusut bering	SUS304
83D	Thrusut bering	SUS304
85A	O ring	NBR
85B	O ring	NBR
85C	O ring	NBR
85D	O ring	NBR
91A	Plug	C3602

## ■ Tough Seal Type V Port Valve

### ● Actuator selection table

#### ○ Valve application

Double acting : VPN1100NC-25/200, VPN1100NB-250/350

Pressure 0.4MPa

Nominal size (A)	Rank	Double acting Shutoff differential pressure : MPa													Rank	Nominal size (A)
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6		
25	A														A	25
	B														B	
	C														C	
40	A														A	40
	B														B	
	C														C	
50	A														A	50
	B														B	
	C														C	
65	A														A	65
	B														B	
	C														C	
80	A														A	80
	B														B	
	C														C	
100	A														A	100
	B														B	
	C														C	
125	A														A	125
	B														B	
	C														C	
150	A														A	150
	B														B	
	C														C	
200	A														A	200
	B														B	
	C														C	
250	A														A	250
	B														B	
	C														C	
300	A														A	300
	B														B	
	C														C	
350	A														A	350
	B														B	
	C														C	

#### ○ Valve application

Single acting : VPO1100NC-25/200, VPO1100NB-250/350

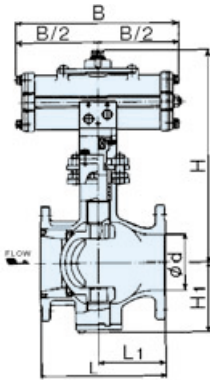
Pressure 0.4MPa

Nominal size (A)	Rank	Double acting Shutoff differential pressure : MPa													Rank	Nominal size (A)
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6		
25	A														A	25
	B														B	
	C														C	
40	A														A	40
	B														B	
	C														C	
50	A														A	50
	B														B	
	C														C	
65	A														A	65
	B														B	
	C														C	
80	A														A	80
	B														B	
	C														C	
100	A														A	100
	B														B	
	C														C	
125	A														A	125
	B														B	
	C														C	
150	A														A	150
	B														B	
	C														C	
200	A														A	200
	B														B	
	C														C	
250	A														A	250
	B														B	
	C														C	
300	A														A	300
	B														B	
	C														C	
350	A														A	350
	B														B	
	C														C	

## Tough Seal Type V Port Valve

### ● Boundary dimension

○ Valve application : VPN1100NC (Double acting)

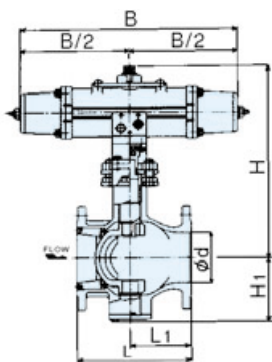


VPN1100NC PN04D~12D

Unit : mm

DN	d	Stainless cast steel Cast steel Ductile cast steel				H1	Actuator code	B	B1	B2	H	Weight (kg) St. cast steel
		10K CL150		20K CL300								
		L	L1	L	L1							
2 5	25	127	72	165	110	48	PN-04D	144	B/2	B/2	200	5.5
							PN-05D	172			212	6.5
4 0	38	165	95	190	120	71	PN-05D	172	B/2	B/2	241	10
							PN-06D	214			257	11
							PN-08D	266			278	14.5
5 0	51	178	103	216	141	77	PN-06D	214	B/2	B/2	262	12.5
							PN-08D	266			283	16
6 5	64	190	110	241	161	96	PN-06D	214	B/2	B/2	295	18
							PN-08D	266			316	20
							PN-10D	336			360	25.5
8 0	76	203	113	283	193	101	PN-08D	266	B/2	B/2	321	21.5
							PN-10D	336			365	27
1 0 0	102	229	123	305	199	131	PN-08D	266	B/2	B/2	359	29.5
							PN-10D	336			403	35
							PN-12D	420			436	43
1 2 5	127	356	211	381	236	163	PN-10D	336	B/2	B/2	453	50.5
							PN-12D	420			483	67.5
							PN-13D	644			570	90
1 5 0	152	394	244	403	253	173	PN-12D	420	B/2	B/2	496	78.5
							PN-13D	644			580	104
							PN-18D	758			—	141
2 0 0	203	457	257	502	302	211	PN-13D	644	B/2	B/2	625	140
							PN-18D	758			—	177
2 5 0	250	533	323	610	—	259	PN-22D	988	B/2	B/2	845	—
							PN-25D	1270			905	—
3 0 0	300	610	360	—	—	316	PN-22D	988	B/2	B/2	900	—
							PN-25D	1270			980	—
3 5 0	335	686	416	—	—	331	PN-22D	988	B/2	B/2	915	—
							PN-25D	1270			995	—

○ Valve application : VPO1100NC (Single acting)



VPO1100NC PO-05D~12D

Unit : mm

DN	d	Stainless cast steel Cast steel Ductile cast steel				H1	Actuator Code	B	B1	B2	H	Weight (kg) St. cast steel
		10K CL150		20K CL300								
		L	L1	L	L1							
2 5	25	127	72	165	110	48	PO-05D	268	B/2	B/2	212	7.5
							PO-06D	314			228	9
							PO-08D	329			249	12
4 0	38	165	95	190	120	71	PO-06D	314	B/2	B/2	257	13
							PO-08D	329			278	16.5
							PO-10D	500			322	24.5
5 0	51	178	103	216	141	77	PO-08D	329	B/2	B/2	283	18
							PO-10D	500			327	26.5
6 5	64	190	110	241	161	96	PO-08D	329	B/2	B/2	316	22.5
							PO-10D	500			360	30.5
							PO-12D	634			393	43.5
8 0	76	203	113	283	193	101	PO-10D	500	B/2	B/2	365	32.5
							PO-12D	634			398	45.5
1 0 0	102	229	123	305	199	131	PO-10D	500	B/2	B/2	403	42
							PO-12D	634			436	55
1 2 5	127	356	211	381	236	163	PO-13D	869	B/2	B/2	491	97
							PO-18D	1013			547	322
1 5 0	152	394	244	403	253	173	PO-18D	1013	B/2	B/2	612	182
							PO-13D	869			547	322
2 0 0	203	457	257	502	302	211	PO-18D	1013	B/2	B/2	622	196
							PO-22D	1272			634	379
2 5 0	250	533	323	610	—	259	PO-22D	1272	B/2	B/2	800	265
							PO-25D	1671			635	1036
3 0 0	300	610	360	—	—	316	PO-25D	1272	B/2	B/2	845	—
							PO-25D	1671			635	1036
											975	—

## ■ Accessories

### ○ Manual operated unit

Product code	MT1	MT2
Applicable Actuator	04D ~ 08D	10D ~ 12D
Handle rotations	43 times	45 times

### ○ Limit switch

Guard type	Rain proof			Explosion proof	Rain proof	Explosion proof
Applicable Actuator	04D · 05D	06D · 08D	10D · 12D	04D ~ 12D	13D, 18D, 22D, 25D	
In-house code	LS1A	LS1B	LS20	—	—	—
Manufacturer code	V-5114E			1LX5001	1LSI-J	1LX5001
Rated Voltage	AC	16A-125, 250V		5A-125, 250V	10A-125, 250, 480V	5A-125, 250V
	DC	0.6A-115V 0.3A-230V		0.8A-125V 0.4A-250V	0.8A-125V 0.4A-250V	
Manufacturer	Yamatake Haneueru					

### ○ Solenoid valve

Guard type	Drip proof	Rain proof	Explosion proof	Drip proof	Rain proof	Explosion proof
Applicable Actuator	04D ~ 12D			13D, 18D, 22D, 25D		
In-house code	ES1	ES20	ES30	—	—	—
Manufacturer code	VF3190	VF3190A	50-VF3190A	4F310-10	4F310-10-B	4F310E-10
Rated Voltage	AC100/110V · 50/60Hz, 200/220V · 50/60Hz			AC100/110V · 50/60Hz, 200/220V · 50/60Hz		
Joint size	Rc1/4			Rc3/8		
Effective section area	13.5mm <sup>2</sup>			32mm <sup>2</sup>		
Manufacturer	SMC			CKD		

### ○ Positioner

Input-Output	Pneumatic - Pneumatic		Electric - Pneumatic (Frame Explosion proof)
Manufacturer code	NP22		NE22
Joint size	Rc1/4		
Supply pressure	0.4 ~ 0.7 MPa		
Signal	20 ~ 100KPa		4 ~ 20mA DC
Linearity	Within ± 1.5%F.S		
Hysteresis	Within 1%F.S		
Air consumption	15N ℓ /min (assumes 0.4 MPa as supply pressure)		13N ℓ /min (assumes 0.4 MPa as supply pressure)
Note	Actuator 04D ~ 06D equip speedcontroller as default		—

### ○ Air Filter Regulator

Applicable Actuator	04D ~ 13D		18D, 22D, 25D
Manufacturer code	AW2001-02-X627	AW2001-02-X619	AW3001-03-X714
Joint size	Rc1/4		Rc3/8
Available pressure scope	0.05 ~ 0.85MPa		
Filtering accuracy	5 micron		
Filter case	With case guard	Metal case (ADC12)	With case guard
Manufacturer	SMC		
Note	Use bracket for positioner		

### ○ Speed controller

Applicable Actuator	04D ~ 13D			18D, 22D, 25D
Manufacturer code	ASN2-01	AS2200-02	AS2000-02	AS4000-03
Allowable pressure	0 ~ 0.99MPa	0.1 ~ 0.7MPa	0.05 ~ 0.99MPa	0.05 ~ 0.99MPa
Joint size	Rc1/4			Rc3/8
Manufacturer	SMC			
Note	Directly attach to ESI ~ ES30 Only for squeezing air	Directly attach to the valves except ESI ~ES30, and positioner	Not for ESI~ES30. For squeezing suction air with PO / PC.	—

