

NDV BALL VALVES



NIPPON DAIYA VALVE Co., Ltd.

1. 2-Way Ball Valve

Fire Safe Type Ball Valve: F100NB
High Pressure / Large Bore Ball Valve: E(K)100S
Jacketed Ball Valve: E100JNC
Extension Stem Ball Valve: FEX100NB

2-Way Ball Valve

2. 3-Way Ball Valve

2 Seats 3-Way Ball Valve: E300NB-L2
4 Seats 3-Way Ball Valve: E300NB-T4/L4
3 Seats 3-Way Ball Valve: E300N-T3/L3

3-Way Ball Valve

3. V-Port Valve

V100ND(NC)

V-Port Valve

4. Pneumatically Operated Valve

Pneumatically Operated 2-Way Ball Valve
Pneumatically Operated 3-Way Ball Valve
Pneumatically Operated V-Port Valve

Pneumatically Operated Valve

5. Electrically Operated Valve

Electrically Operated 2-Way Ball Valve
Electrically Operated 3-Way Ball Valve
Electrically Operated V-Port Valve

Electrically Operated Valve

6. Special Purpose Ball Valve

High Temperature Ball Valve
Y-Shaped 3-Way Ball Valve
Ball Valve for Shield Tunneling Method
Top Entry Ball Valve

Special Purpose Ball Valve

7. Safety Instructions

Safety Instructions

Contents

7 | 1. 2-Way Ball Valve

8	2-Way Ball Valve Structure and Features	12	1-1. Fire Safe Ball Valve: F100NB
9	Sealing Mechanism	15	1-2. High Pressure / Large Bore Ball Valve: E(K)100S
10	Reference for Seat Selection	16	1-3. Jacketed Ball Valve: E100JNC
		18	1-4. Extended Gland Ball Valve: FEX100NB

21 | 2. 3-Way Ball Valve

22	Flow Pattern and Seats number	24	2-1. 2 seats 3-Way Ball Valve: E300NB-L2
23	Changeover Form	25	2-2. 4 seats 3-Way Ball Valve: E300NB-T4/L4
23	Valve Code	26	2-3. 3 seats 3-Way Ball Valve: E300N-T3/L3

27 | 3. V-Port Valve

28	Structure and Features	31	3. V-Port Valve: V100ND(NC)
29	Reference for Seat Selection		

33 | 4. Pneumatically Operated Valve

34	Torque Actuator: 04DN to 12DN	43	4-2. Pneumatically Operated 3-Way Ball Valve
36	Torque Actuator for Large Bore: 13D to 25D	44	2 seats 3-Way Ball Valve:
37	Selection for Actuator		EPN(PO,PC)1300NB-L2
38	4-1. Pneumatically Operated 2 Way Ball Valve	46	4 seats 3-Way Ball Valve:
39	Fire Safe Ball Valve:		EPN(PO,PC)1300NB-T4/L4
	FPN(PO,PC)1100NB		3 seats 3-Way Ball Valve:
41	Jacketed Ball Valve:		EPN(PO,PC)1300N-T3/L3
	EPN(PO,PC)1100JNC	48	4-3. Pneumatically Operated V Port Valve:
42	Extended Gland Ball Valve:		VPN(PO,PC)1100ND(NC)
	FEXPN(PO,PC)1100NB	51	4-4. Data for Pneumatically Operated Valve

55 | 5. Electrically Operated Valve

56	Models and Features	65	5-2. Electrically Operated 3-Way Ball Valve
56	SRH Type		2 Seats 3-Way Ball Valve:
57	SRJ Type		E□4300NBL2
58	SHA Type, SD# Type		4 Seats 3-Way Ball Valve:
59	PMK Type		E□4300NB-T4/L4
60	5-1. Electrically Operated 2-Way Ball Valve		3 Seats 3-Way Ball Valve:
	Fire Safe Type:		E□4300N-T3/L3
	F□4100NB	70	5-3. Electrically Operated V-Port Valve
			V□4100ND(NC)

73 | 6. Special Purpose Ball Valve

74	6-1. High Temperature Valve	81	6-3. Ball Valve for Shield Tunneling Method
	Metal Seat Ball Valve	82	6-4. Top Entry Ball Valve
76	6-2. Y-Shaped 3-Way Ball Valve		

83 | 7. Safety Instructions

4

Pneumatically Operated Valve

Torque Actuator: 04DN to 12DN

Torque Actuator for Large Bore: 13D to 25D

Selection for Actuator

4-1. Pneumatically Operated 2-Way Ball Valve

- Fire Safe Type Ball Valve: FPN(PO,PC)1100NB
- Jacketed Ball Valve: EPN(PO,PC)1100JNC
- Extended Gland Type Ball Valve: FEXPN(PO,PC)1100NB

4-2. Pneumatically Operated 3-Way Ball Valve

- 2 Seats 3-Way Ball Valve: EPN(PO,PC)1300NB-L2
- 4 Seats 3-Way Ball Valve: EPN(PO,PC)1300NB-T4/L4
- 3 Seats 3-Way Ball Valve: EPN(PO,PC)1300N-T3/L3

4-3. Pneumatically Operated V-Port Valve: VPN(PO,PC)1100ND(NC)

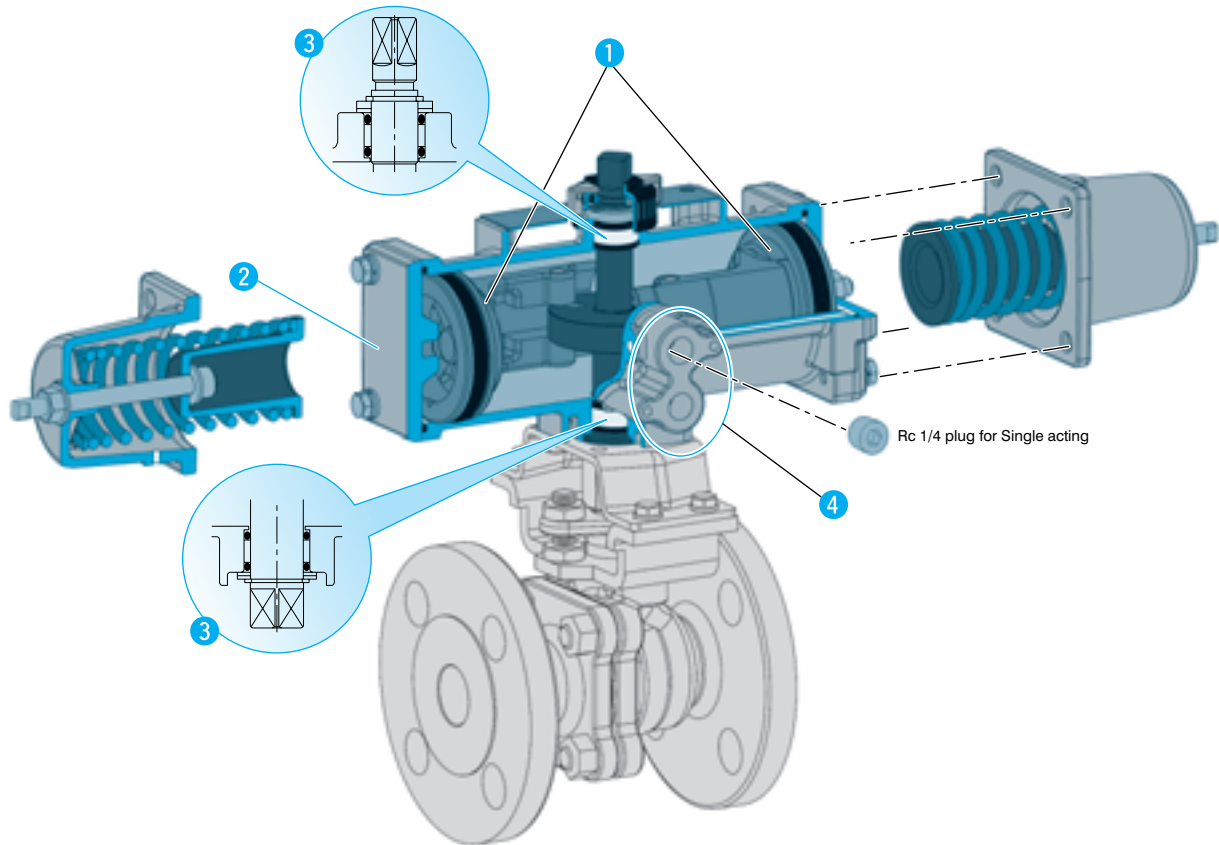
4-4. References for Pneumatically Operated Valve

Torque Actuator: 04DN to 12DN

Structure and Features

- 1 Compact and light weight with double pistons type.
- 2 Environment-conscious type paint is used.
- 3 Sealing capability has improved by increasing the number of O-Ring at upper and lower position of drive shaft from 1 to 2 each.
- 4 Air inlet connection conforms to NAMUR standard(*).

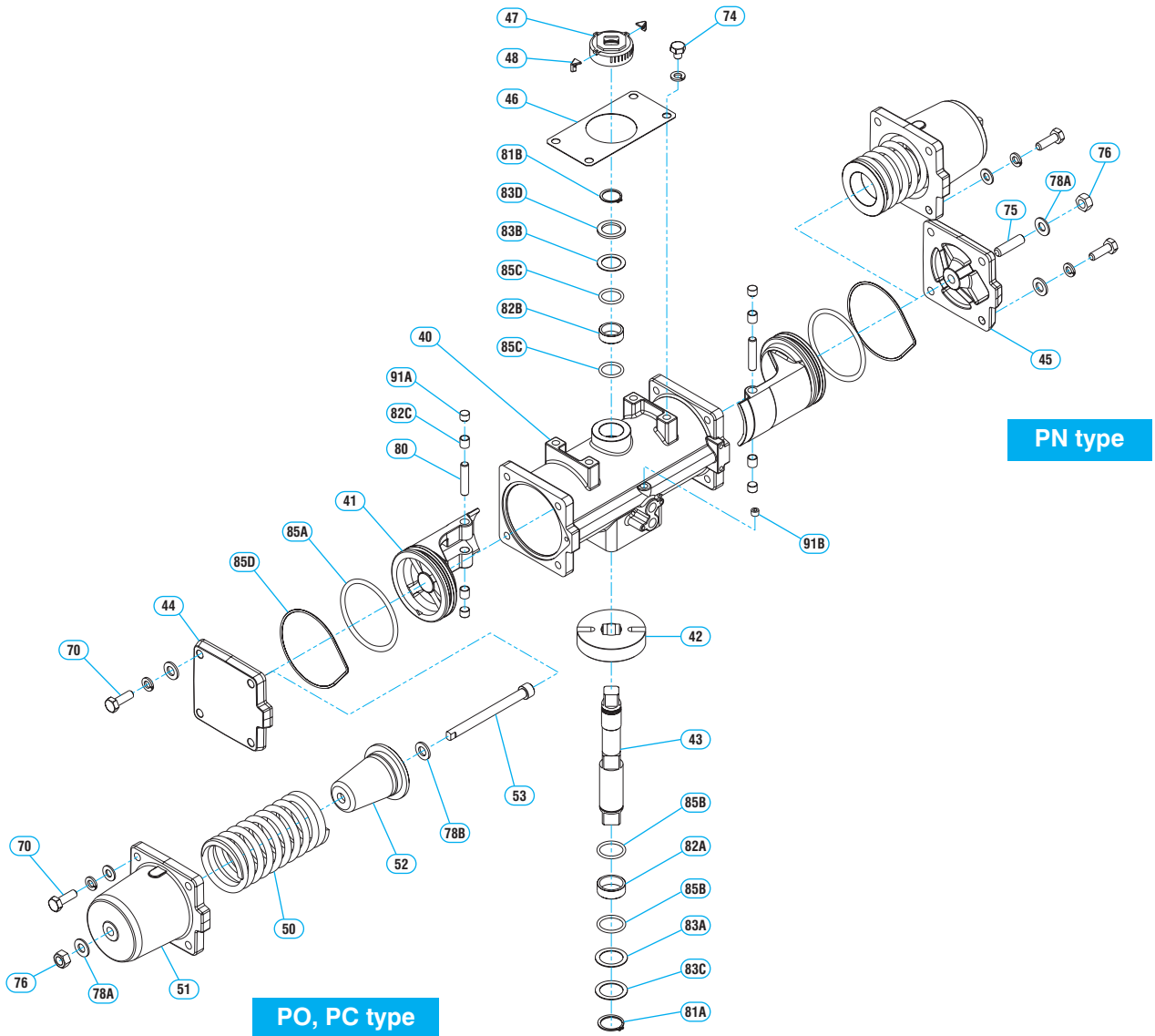
*: The code VDI/VDE3845-2010 for the size of the attachments of actuators



Specification

Operation Type	Double Acting: PN (Air to Open / Air to Close) Single Acting: Reverse Acting PO (Air to Open / Spring to Close) Direct Acting PC (Air to Close / Spring to Open)
Operating Pressure	0.4 to 0.7MPa (Option: 0.3MPa)
Materials	Cylinder: ADC12 (Aluminum Die-cast) Spring Cover: ADC12 Drive Shaft: SCM435
Ambient Temperature	-10 to 50°C *except frozen condition (Please consult with NDV if the ambient temperature is more than 50°C)
Rotation Angle	Partial turn 0 to 90°
Manual Operation	Manual operating device is installable. *In case of double acting, lever operation is possible by installing by-pass at air chambers or by atmospheric discharge.
Air Inlet Connection	Rc1/4 (Solenoid valve connection: NAMUR Standard)
Painting for Actuator	Platinum Silver (conforming to RoHS)
Lubricant Oil	Shell Arbania EP2 grease (conforming to RoHS)
Durability	More than 100,000 times (with load) *not guaranteed value

Parts and Materials



No.	Parts	Materials
40	Cylinder	ADC12
41	Piston	FCD400
42	Scotch York	SMF5030, S45C (*)
43	Drive Shaft	SCM435
44	Cover A	ADC12
45	Cover B	ADC12
46	Nameplate	A1100P
47	Cap	ABS
48	Indicator	Polypropylene
50	Coil Spring	Spring Steel
51	Spring Cover	ADC12
52	Spring Bearing	S20C, FCD400
53	Cap Screw	SUS304

No.	Parts	Materials
70	Bolt	SUS304
74	Pan Head Screw (dia.40, 50, 63, 80)	SUS304
	Bolt (dia.100, 125)	SUS304
75	Socket Screw	SUS304
76	Nut	SUS304
78A	Seal Washer	SS & NBR
78B	Washer	SPCC
80	Straight Pin	SUS630
81A	Snap Ring	SUS304
81B	Snap Ring	SUS304
82A	Bearing	Polyacetal

No.	Parts	Materials
82B	Bearing	Polyacetal
82C	Bearing	SS & fluorocarbon
83A	Thrust Bearing	Polyacetal
83B	Thrust Bearing	Polyacetal
83C	Thrust Bearing	SUS304
83D	Thrust Bearing	SUS304
85A	O-Ring	NBR
85B	O-Ring	NBR
85C	O-Ring	NBR
85D	O-Ring	NBR
91A	Plug	C3602
91B	Plug (dia.40,100,125)	SUS304

※: 10DN, 12DN

2-Way Ball Valve

3-Way Ball Valve

V-Port Valve

Pneumatically Operated Valve
Torque Actuator

Electrically Operated Valve

Special Purpose Ball Valve

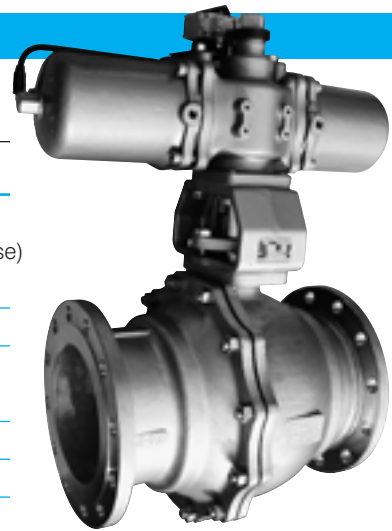
Safety Instructions

Torque Actuator for Large Bore: 13D to 25D

Structure and Features

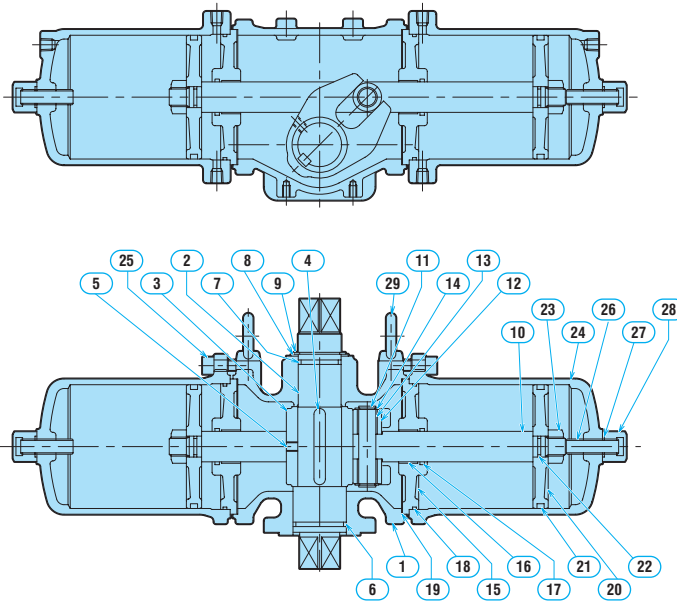
Double Cylinder 90° Rotation Piston type Actuator with Scotch York.

Operation Type	Double Acting: PN (Air to Open / Air to Close) Single Acting: Reverse Acting PO (Air to Open / Spring to Close) Direct Acting PC (Air to Close / Spring to Open)
Operating Pressure	0.4 to 0.7MPa (Option: 0.3MPa)
Ambient Temperature	-10 to 50°C *except frozen condition (Please consult with NDV if the ambient temperature is more than 50°C)
Rotation Angle	Part turn 0 to 90°
Manual Operation	Manual operating device is installable.
Painting for Actuator	Silver (conforming to RoHS)

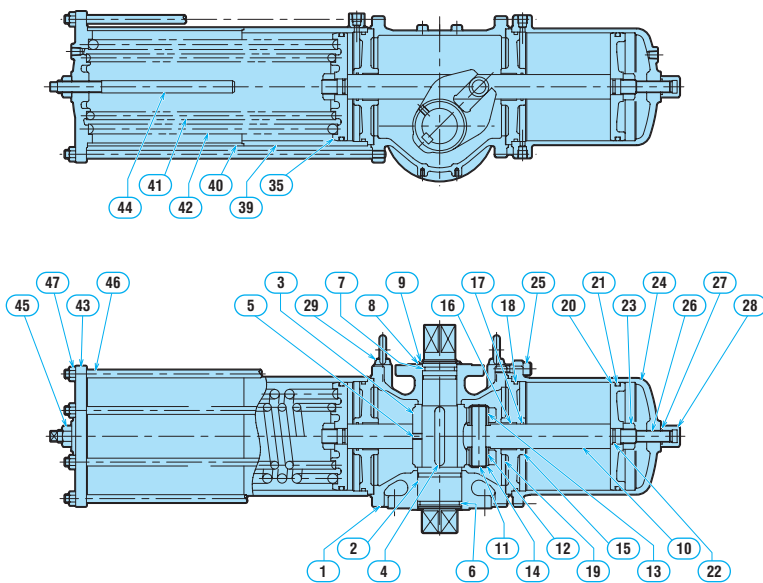


Parts and Materials

Double Acting



Single Acting



No.	Parts	Materials
1	Bracket	FC200
2	Shaft	S45C
3	Parallel Arm	FCD450
4	Key	S45C
5	Nut	SCM435
6	O-Ring	NBR
7	O-Ring	NBR
8	Thrust Bearing	NYLON
9	Stop Ring	SK5
10	Piston Rod	S45C
11	Pin	S45C
12	Roller	S45C
13	Bearing	SS & POM
14	Stop Ring	SK5
15	Distance	FC200
16	Bearing	SS & POM
17	O-Ring	NBR
18	O-Ring	NBR
19	Gasket	T#1995
20	Piston	FC200
21	O-Ring	NBR
22	O-Ring	NBR
23	Nut	SS400
24	Cylinder	FCD450
25	Cap Screw	SCM435
26	Stopper Bolt	SCM435
27	O-Ring	NBR
28	Cap Nut	SS400
29	Eye Bolt	SS400
35	Piston	FCD450
39	Cylinder	STKM
40	Spring Case	SGP
41	Spring (inside)	SUP9
42	Spring (outside)	SUP9
43	Cover	FCD450
44	Stopper Bolt	SS400
45	Nut	SS400
46	Long Bolt	S45C
47	Nut	SS400

Selection of Actuator

Selection by Operating Condition

A required torque to operate a valve is different by the fluid condition, the fluid temperature, the seat material or the shutoff differential pressure even if the valve diameter is the same. Therefore, an appropriate actuator must be selected considering conditions to affect the valve torque.

Valve Type: F100NB, E100JNC, E300NB, E300N

Condition		Factor
Seat Material	NTF	a
	NCF	b
	NGR	c
Fluid State	Clean (less than 100cP)	a
	Solvent, Viscous (100 to 500cP)	b
	Sludge, Contamination (Slurry, Iron Powder), Powder, High Viscous Fluid	c
Fluid Temp.	-20 to 150°C	a
	-100 to -21°C, 151 to 200°C	b

Combination of Factor	Rank
3a	A
2a+b, a+2b	B
2a+c, 2b+c, a+b+c, 3b, 2c+a, 2c+b	C

Valve Type: V100ND (NC)

Category	Used Condition (Note 1)	Selection (Note 2)			
		Seat	Operation		Rank
			ON-OFF	Control	
1	Clean Fluid	CF	☉	△	A
		M	○	☉	B
2	Sludge, Viscous Fluid (less than 500CP), Fluid with Fiber, Powder (Soft not including solid matter)	CF	□	△	B
		M	☉	☉	B
		ST	○	○	B
3	Powder (Soft including solid matter)	M	☉	□	B
		ST	○	☉	B
4	High Viscous Fluid (Gum)	M	□	□	C
		ST	☉	☉	C
5	Slurry, Powder (Hard)	ST	☉	☉	C

Note 1: Examples of fluid

Category 1:

Water, Gas, Solvent

Category 2:

Sludge (not including solid matter), Sugar solution, Pulp liquor, Food powder

Category 3:

Food powder, Resin powder (not abrasive)

Category 4:

Latex, Viscose

Category 5:

Coal ash, Coke powder, Resin powder

Note 2

☉: Recommendable to use

○: Possible to use

□: Not recommendable to use

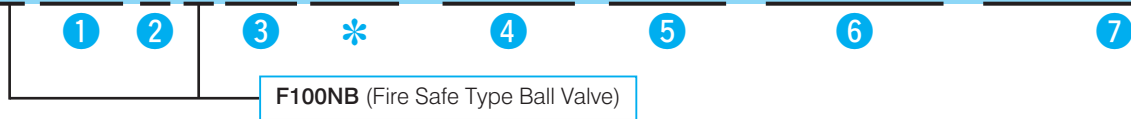
△: Not suitable to use

4-1 Pneumatically Operated 2-Way Ball Valve

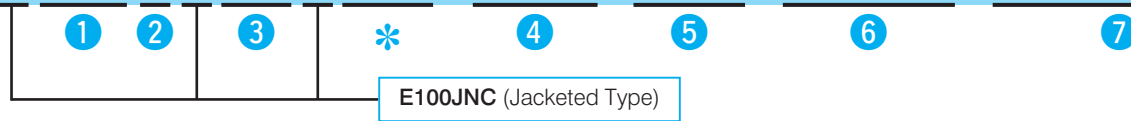
Valve Codes

Valve Code for FPN(PO,PC)1100NB, EPN(PC,PO)1100NB

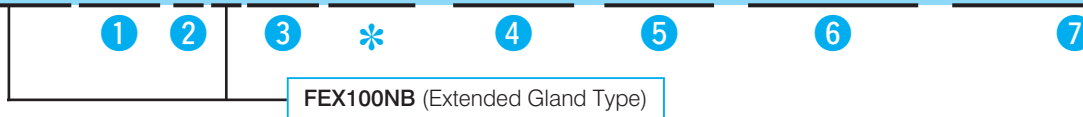
FPN1107NB-NTF-050-06DN-J10KRF



EPN1112JNC-NTF-050-06DN-J10KRF



FEXPN1107NB-NTF-050-06DN-J10KRF



1 Operation Type

PN	Double Acting Type
PO	Reverse Acting Type (Air to Open)
PC	Direct Acting Type (Air to Close)

2 1

Pneumatically Operated Type On-Off Valve

3 Body Material

04	FCD400
07	SCS13A
12	SCS14A
13	SCS16A

4 Seat Material (refer to P10)

NTF, NCF, NGR, CFM, CFMR

5 Nominal Size (DN or A)

Conforming to ISO 6708 and JIS B 2001

7 Connection

J10KRF	JIS 10KRF
J20KRF	JIS 20KRF
A150RF	ASME CL150
A300RF	ASME CL300

* Improvement Identification Code

None	Original Design
N	First Improvement
NB	Second Improvement
NC	Third Improvement
ND	Fourth Improvement

6 Actuator Type (04DN to 12DN, 13D to 25D)

4-1 Pneumatically Operated 2-Way Ball Valve Fire Safe Type: FPN(PO, PC)1100NB

Actuator Selection Table

Valve Type: FPN1100NB-15/200, EPN1100JNC-15/200, FEXPN1100NB-15/150 (Double Acting Type)

Operating Pressure: 0.4MPa

DN	Rank	Double Acting Type									Rank	DN
		Shutoff Deferential Pressure: MPa										
		0.2	0.6	1.0	1.4	1.8	2.2	2.6	3.0			
15	A									A	15	
	B									B		
	C									C		
20	A									A	20	
	B									B		
	C									C		
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		

Valve Type: FPO1100NB-15/200, EPO1100JNC-15/200, FEXPO1100NB-15/150 (Single Acting Type)

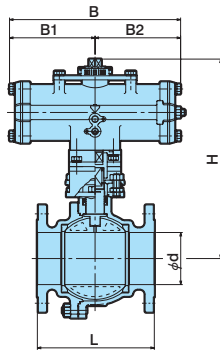
Operating Pressure: 0.4MPa

DN	Rank	Single Acting Type									Rank	DN
		Shutoff Deferential Pressure: MPa										
		0.2	0.6	1.0	1.4	1.8	2.2	2.6	3.0			
15	A									A	15	
	B									B		
	C									C		
20	A									A	20	
	B									B		
	C									C		
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		

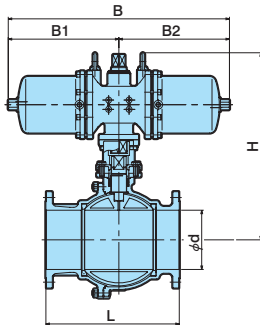
Dimension

Valve Type: FPN1100NB (Double Acting Type, Full-Port)

Unit: mm



FPN1100NB (04DN to 12DN)

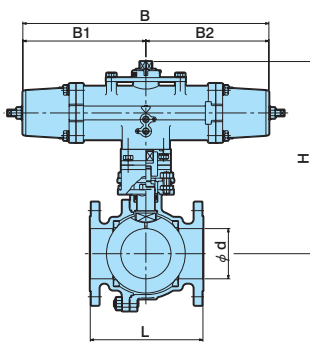


FPN1100NB (13D to 22D)

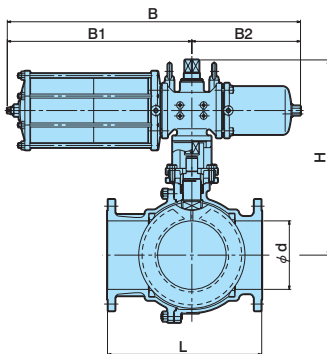
Nominal size DN	d	L		Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
		10K CL150	20K CL300						Stainless Cast Steel	
									10K CL150	20K CL300
15	13	108	140	PN-04DN	144			175	3.0	3.4
				PN-05DN					172	179
20	19	117	152	PN-04DN	144			193	4.0	4.5
				PN-05DN					172	192
25	25	127	165	PN-04DN	144			206	5.0	5.7
				PN-05DN					172	206
40	38	165	190	PN-06DN	214			224	8.9	9.7
				PN-04DN					144	224
50	51	178	216	PN-08DN	266			240	9.9	10.7
				PN-06DN					214	240
65	64	190	241	PN-08DN	266			269	15.8	17.4
				PN-06DN					214	269
80	76	203	283	PN-08DN	266	B/2	B/2	307	17.3	20.8
				PN-10DN					336	307
100	102	229	305	PN-10DN	336			355	28.0	31.5
				PN-12DN					420	355
125	127	356	381	PN-10DN	336			390	28.6	35.1
				PN-12DN					420	390
150	152	394	403	PN-12DN	420			420	49.0	60.5
				PN-13D					644	420
200	203	457	502	PN-12DN	420			426	52.5	65.5
				PN-13D					644	426
				PN-18D	758			505	69.5	82.5
				PN-13D					644	505
				PN-18D	758			525	84.5	98.5
				PN-18D					758	525
				PN-13D	644			596	138.0	152.0
				PN-18D					758	596
				PN-13D	644			579	143.0	168.0
				PN-18D					758	579
				PN-22D	988			641	180.0	205.0
				PN-22D					988	641
				PN-22D	988			752	260.0	285.0
				PN-22D					988	752

Valve Type: FPO1100NB (Single Acting Type, Full-Port)

Unit: mm



FPO1100NB (04DN to 12DN)



FPO1100NB (13D to 25D)

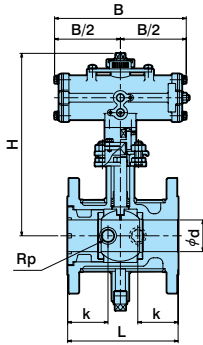
Nominal size DN	d	L		Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
		10K CL150	20K CL300						Stainless Cast Steel	
									10K CL150	20K CL300
15	13	108	140	PO-04DN	212			175	3.5	3.9
				PO-05DN					268	188
20	19	117	152	PO-06DN	314			208	5.2	5.7
				PO-08DN					392	208
25	25	127	165	PO-10DN	214	B/2	B/2	261	15.4	15.8
				PO-08DN					392	261
40	38	165	190	PO-10DN	214			309	24.0	24.8
				PO-08DN					392	309
50	51	178	216	PO-10DN	500			317	26.0	27.6
				PO-12DN					634	317
65	64	190	241	PO-10DN	500			345	33.0	36.5
				PO-12DN					634	345
80	76	203	283	PO-10DN	500			355	36.1	42.6
				PO-12DN					634	355
100	102	229	305	PO-13D	869	547	322	420	59.5	71.0
				PO-18D					1013	420
125	127	356	381	PO-13D	869	547	322	466	97.0	109.0
				PO-18D					1013	466
150	152	394	403	PO-13D	869	547	322	505	118.0	131.0
				PO-18D					1013	505
200	203	457	502	PO-18D	1013	634	379	525	133.0	147.0
				PO-22D					1272	525
				PO-18D	1013	634	379	576	178.0	191.0
				PO-22D					1272	576
				PO-22D	1272	778	494	673	253.0	267.0
				PO-25D					1671	673
				PO-18D	1013	634	379	641	235.0	260.0
				PO-22D					1272	641
				PO-22D	1272	778	494	752	333.0	358.0
				PO-25D					1671	752
				PO-25D	1671	1036	635	789	467.0	492.0
				PO-25D					1671	789

4-1 Pneumatically Operated 2-Way Ball Valve Jacketed Type: EPN(PO, PC)1100JNC

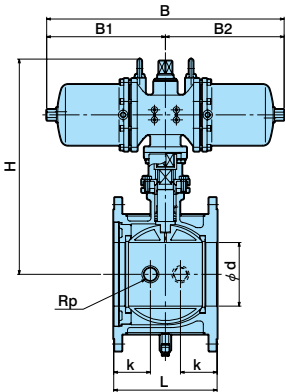
Dimension

Valve Type: EPN1100JNC (Double Acting Jacketed Type)

Unit: mm



EPN1100JNC (04DN to 12DN)

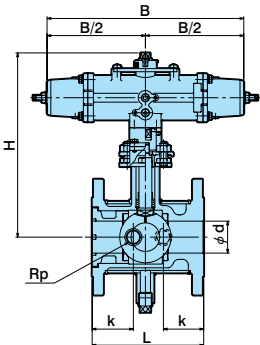


EPN1100JNC (13D to 18D)

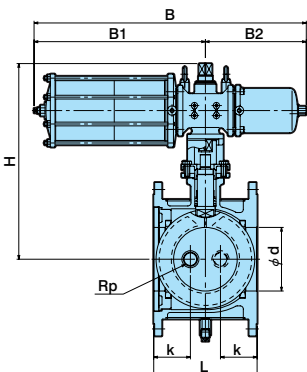
Nominal size DN	d	L	k	Rp	Flange Nominal Size DN	Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
											Stainless Cast Steel	
											10K CL150	
15	13	108	54	1/2	40	PN-04DN	144	B/2	B/2	223	6.4	
20	19	117	58.5			PN-05DN	172			227	6.6	
						PN-06DN	172			240	7.0	
25	25	127	63.5			PN-04DN	144			238	7.8	
						PN-05DN	172			251	8.3	
40	38	165	60			PN-06DN	214			270	13.6	
					PN-08DN	266	286			14.6		
50	51	178	65		PN-06DN	214	295			16.5		
					PN-08DN	266	316			20.5		
65	64	190	70		PN-06DN	214	331			23.8		
					PN-08DN	266	352			26.3		
80	76	203	75		PN-10DN	336	362			33.4		
				PN-12DN	420	408	39.1					
100	102	229	75	PN-12DN	420	421	55.0					
				PN-13D	644	454	65.0					
125	127	267	80	3/4	200	PN-10DN	336	471	73.5			
						PN-12DN	420	504	90.5			
						PN-13D	644	550	107.0			
150	152	292	85		250	PN-12DN	420	524	121.5			
						PN-13D	644	570	138.0			
						PN-18D	758	641	175.0			
200	203	330	90	350	PN-13D	644	625	207.0				
					PN-18D	758	687	244.0				

Valve Type: EPO1100JNC (Single Acting Jacketed Type)

Unit: mm



EPO1100JNC (04DN to 12DN)



EPO1100JNC (13D to 22D)

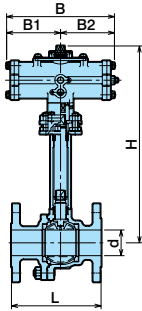
Nominal size DN	d	L	k	Rp	Flange Nominal Size DN	Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
											Stainless Cast Steel	
											10K CL150	
15	13	108	54	1/2	40	PO-04DN	212	B/2	B/2	223	6.9	
						PO-05DN	268			236	7.8	
20	19	117	58.5			PO-06DN	314			240	8.2	
						PO-08DN	392			256	9.7	
25	25	127	63.5			PO-10DN	500			267	11.1	
						PO-12DN	634			306	18.2	
40	38	165	60		PO-12DN	634	308			20.1		
					PO-18D	1013	316			22.0		
50	51	178	65		PO-10DN	500	364			30.7		
					PO-12DN	634	400			39.5		
65	64	190	70		PO-10DN	500	410			46.6		
					PO-12DN	634	441			58.6		
80	76	203	75	3/4	200	PO-13D	869	547	322	454	75.5	
						PO-18D	1013	634	379	621	199.0	
PO-22D	1272	778	494			798	397.0					
100	102	229	75		250	PO-13D	869	547	322	570	170.0	
						PO-18D	1013	634	379	641	230.0	
125	127	267	80		350	PO-18D	1013	634	379	687	299.0	
				PO-22D		1272	778	494	798	397.0		

4-1 Pneumatically Operated 2-Way Ball Valve Extended Gland Type: FEXPN(PO, PC)1100NB

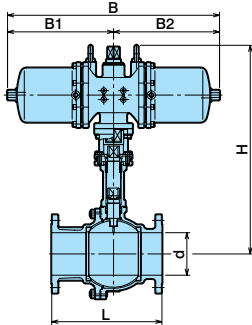
Dimension

Valve Type: FEXPN1100NB (Double Acting Extended Gland Type)

Unit: mm



FEXPN1100NB (04DN to 12DN)

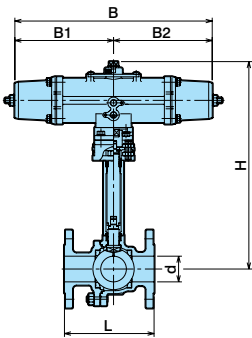


FEXPN1100NB (13D to 18D)

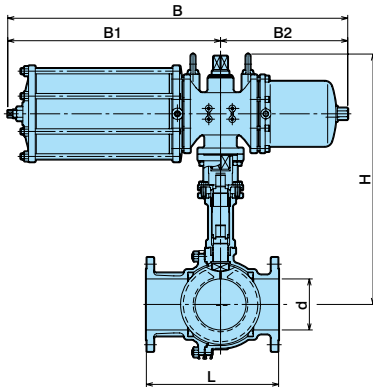
Nominal size DN	d	L		Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
		10K CL150	20K CL300						Stainless Cast Steel	
									10K CL150	20K CL300
15	13	108	140	PN-04DN	144	B/2	B/2	325	3.7	4.2
								329	4.3	4.9
20	19	117	152	PN-05DN	172	B/2	B/2	342	4.7	5.3
								343	6.0	6.8
25	25	127	165	PN-04DN	144	B/2	B/2	356	6.5	7.3
								374	10.6	11.7
40	38	165	190	PN-05DN	172	B/2	B/2	390	11.6	12.7
								398	13.3	15.2
50	51	178	216	PN-06DN	214	B/2	B/2	419	17.3	19.2
								426	19.8	23.8
								447	22.3	26.3
65	64	190	241	PN-06DN	214	B/2	B/2	495	30.5	34.0
								457	25.4	32.4
								505	31.1	38.1
80	76	203	283	PN-08DN	266	B/2	B/2	540	42.0	54.0
								570	52.0	64.0
100	102	229	305	PN-10DN	336	B/2	B/2	576	59.5	73.3
								609	76.5	90.3
125	127	356	381	PN-10DN	336	B/2	B/2	655	95.0	108.8
								629	91.5	106.3
								675	109.0	123.8
150	152	394	403	PN-12DN	420	B/2	B/2	746	145.0	159.8
								746	145.0	159.8
								746	145.0	159.8

Valve Type: FEXPO1100NB (Single Acting Extended Gland Type)

Unit: mm



FEXPO1100NB (04DN to 12DN)



FEXPO1100NB (13D to 18D)

Nominal size DN	d	L		Actuator Code	B	B1	B2	H	Mass (Approx. kg)	
		10K CL150	20K CL300						Stainless Cast Steel	
									10K CL150	20K CL300
15	13	108	140	PO-04DN	212	B/2	B/2	325	4.2	4.7
								338	5.1	5.6
20	19	117	152	PO-05DN	268	B/2	B/2	342	5.9	6.5
								358	7.4	8.0
25	25	127	165	PO-06DN	314	B/2	B/2	372	9.3	10.1
								411	16.4	17.1
40	38	165	190	PO-08DN	392	B/2	B/2	459	24.0	25.7
								419	18.8	20.7
50	51	178	216	PO-10DN	214	B/2	B/2	467	27.8	29.7
								495	35.5	39.5
65	64	190	241	PO-08DN	392	B/2	B/2	526	47.5	51.5
								505	38.6	45.6
80	76	203	283	PO-10DN	500	B/2	B/2	536	50.6	57.6
								570	63.0	74.5
100	102	229	305	PO-12DN	634	B/2	B/2	616	100.0	112.0
								655	130.0	143.8
125	127	356	381	PO-13D	869	547	322	726	190.0	203.8
								675	149.0	163.8
150	152	394	403	PO-18D	1013	634	379	746	209.0	223.8
								746	209.0	223.8
								823	259.0	273.8

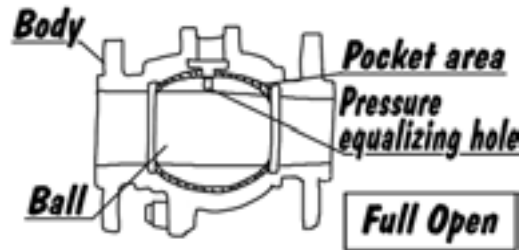
7

Safety Instructions

Safety Instructions

1. Selection of Valves

- 1 Usable ranges for products described on this brochure are limited according to the domestic/international code and standard and NDV standard. Appropriate products must be selected after confirming the usage conditions (fluid, pressure, temperature etc.).
- 2 Materials for the main parts of valves must be selected properly considering working conditions (fluid, temperature etc.).
- 3 Please specify degrease or water proof when issuing order. (Some of the products may not be applicable for degrease or water proof.)
- 4 Soft seat floating ball valve must be used at full open/close position. Usage at intermediate position may cause damages of the surface of ball and/or seat.
- 5 Because of the structure of ball valve, abnormal pressure rise at pocket (*) occurs if the fluid is liquid and the temperature fluctuates. Ball top is provided with a hole to prevent this abnormal pressure rise. The alternative countermeasure should be taken incase the abnormal pressure rise happens by temperature rise at the pocket during valve full closing. Please consult with NDV or local representative if the case occurs.



* During valve full OPEN: Space between ball and shell

During valve full CLOSE: Space between ball and shell, Ball bore portion

- 6 Floating ball valve has a mechanism to seal by pushing ball against the seat of the outlet side with fluid pressure. Please consult with NDV or local representative in case that the pressure change is large in operation condition because seat leakage may occur at low pressure operation.
- 7 Please consult with NDV or local representative in case that fluid includes abrasive matter because an abrasion may occur at seat, body or other parts of valve.

2. Receipt and Carriage

- 1 Wrapping and packing conditions, products condition and number of goods must be checked and confirmed at the time of the receipt.
- 2 Delivered goods may be heavy depending on the bore size. Unloading and carriage must be done using proper machines and tools according to the relevant law for safety and health. Do not go under lifted goods, do not insert hand or leg below goods and do not operate lifting machine under the lifted goods.
- 3 If packing is by corrugated board, the packing strength will become low when wetted. Handling must be carefully done if the corrugated board is wet.

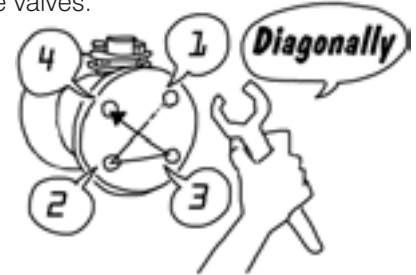
3. Storage

- 1 It is recommended to store products under packing condition until installing them to piping.
- 2 If products are stored for some time after unpacking, dust proof seal (cap) at flange face must not be removed.
- 3 Products must be stored under below mentioned conditions in order to avoid rust and/or degradation of materials.
 1. To protect from rain or water
 2. Ambient temperature must be below 50°C
(The temperature might be different by installed accessories.)
 3. To avoid high humidity and dust atmosphere



4. Installation to Piping

- 1 Remove dust proof seal (cap) at connection flange face and confirm that there are no dusts and/or deposits inside. Confirm also that there are no foreign materials inside of the piping after cleaning. Blow off by air or flush by fluid if necessary.
- 2 Ball valves have not a restriction for the flow direction. Install valves to piping considering the position of operation handle and the other necessary issues for safety operation. If flow direction is marked on the valve for some reason such as a protection of abnormal pressure rise, install as directed by the mark.
- 3 Keep a space for overhauling. The space needs necessary area for lifting a complete set of the valve.
- 4 Valves are delivered at full open position unless otherwise specified. Install valves keeping full open position.
- 5 Install valves avoiding strong tension, compression or bending stress to the valves.
- 6 When installing valves, bolts for installation must be tightened diagonally and equally. Unbalanced tightening may cause leakages from connection flanges.
- 7 Confirm that tightening bolts and nuts are not loosened. Retighten them if loosened.
- 8 After installing valves, blowing off by air or flushing by fluid at full open valve condition must be done to clean foreign materials in piping. (Do not close and open valve during blowing off or flushing.)



5. Operation

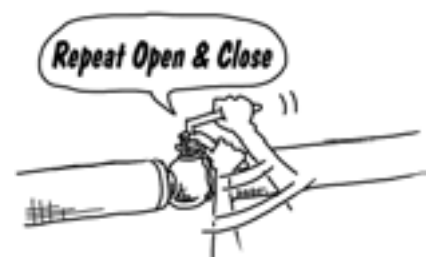
- 1 Do not operate valve with excessive torque by attaching a pipe or a wrench to the lever handle for opening or closing.
- 2 Never put fingers or hands into the inside of valve.
- 3 If there is any leakage from the gland, tighten further the gland bolt. If valve is used for fluid of large temperature change, degree of stress relief of packing is large and therefore, retightening must be done after the temperature once becomes high and falls to low.
- 4 Products may be damaged if remaining fluid in the valve is frozen. If there is a possibility of frozen, heat piping line or clean the inside of valves.

6. Pneumactical and Electrical Actuator

- 1 Air vent and electric wiring terminal are fitted with seals. Do not remove the seals until installation to the connections.
- 2 Actuators are delivered after adjustment. Do not disassemble or readjustment. Call NDV or local representative, if some adjustment seems necessary.
- 3 Use air dehumidified and cleaned by filtration.
- 4 Operating pressure and power source must be confirmed by the plate attached to the valve and/or the specification.
- 5 Take care that rain or water will not enter from air hole of the actuator.

7. Disassembling and assembling

- 1 Before remove a valve from piping, discharge the fluid in the piping and relieve the pressure. In this occasion, the valve must be opened and closed several times to relieve the pressure in the valve. Special attention must be given if the fluid is hazardous like poisonous or abrasive fluid.
- 2 Be careful not to damage the seal part of ball surface and flange face during disassembling and assembling.



Memo

A series of horizontal dotted lines for writing.

- The ISO 9001 · 14001 certificate was awarded



CAUTION

Specifications and performance figures of products contained in this catalog are on the design calculations, in-house tests, actual records of product application, and the official standards and specifications. They are presented as the user guide on the use of product concerned under general service conditions. Users intending to use the product under a special condition are required to receive engineering advice from this company in advance or to make their own studies and evaluation to verify performance on their own responsibility. This company shall not be liable for any damages, material or human, that may arise without following this procedure. In as much as full care was taken in editing this catalog, users are kindly requested to make contact with this company for any questions or discrepancies found. This catalog is subject to change without notice for the purpose of correcting error, supplementing or improving insufficient content, updating the content to the improved product performance, design change, discontinuation of product and other reasons. Revised version automatically invalidates catalogs issued prior to the current version. Check the version with our Sales Dept. or local representative before you place orders.

WARNING

CAUTION

There are several points to be noticed for the use of ball valve based on the structural characteristics. When valve is delivered, a leaflet for Safety Instructions is in the package. Please read this instruction thoroughly before handling and use of products in order to use them safely and stably for a long time.

NDV NIPPON DAIYA VALVE CO., LTD.

Head Office: 1-3-22, Hiro-machi, Shinagawa-ku, Tokyo 140-0005

TOKYO Sales Department: Tel. TOKYO (03)3490-4801 Fax. TOKYO (03)3490-7950

INTERNATIONAL Sales Department: Tel. TOKYO (03)5434-5330 Fax. TOKYO (03)5434-5331

NAGOYA Branch: 3-2108, Nakajima-shincho, Nakagawa-ku, Nagoya-shi, Aichi 454-0932

Tel. AICHI (052)354-3171 Fax. AICHI (052)354-3174

OSAKA Branch: Takakura Bldg., 2-5-9, Awaji-machi, Chuo-ku, Osaka-shi, Osaka 541-0047

Tel. OSAKA (06)6203-7721 Fax. OSAKA (06)6222-5895

OKAYAMA Branch: Ima 8-chome, No.2 Bldg., 3-35, Ima 8-chome, Kita-ku, Okayama-shi, Okayama 700-0975

Tel. OKAYAMA (086)241-2669 Fax. OKAYAMA (086)244-3540

KITA-KYUSHU Branch: 2-2-4, Tate-machi, Kokurakita-ku, Kitakyushu-shi, Fukuoka 803-0818

Tel. FUKUOKA (093)571-2438 Fax. FUKUOKA (093)591-3277

<http://www.ndv.co.jp>